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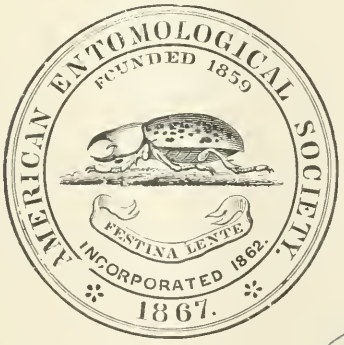

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TRANSACTIONS

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AMERICAN ENTOMOLOGICAL SOCIETY.

VOLUME XXVII.

CONTRIBUTIONS TOWARD A MONOGRAPH OF THE NORTH AMERICAN NOCTUIDÆ.

REVISION OF THE SPECIES OF XYLINA Ochs.

BY JOHN B. SMITH, SC.D.

The species of *Xylina* are characterized by rather narrow, subequal primaries, the costal and inner margins parallel, of nearly the same length, the outer margin only a little oblique, sometimes stumpy, often with a cut at the anal angle, the outer margin or fringes a little dentate. In general habitus the species look depressed or a little flattened, and when at rest the primaries are laid flat over the abdomen, not sloping or rooflike.

Head small, closely applied to the thorax, but not retracted; vestiture of front mixed with bristly hair so that it projects straight forward, forming more or less evident, superimposed flat tufts. There are no protuberances, plates or processes. Antennæ moderate in length, about two-thirds the length of the primaries, in the female simple, or ciliated; in the male ciliated or with lateral tufts of hair or bristles, not serrated or pectinated in any case. Between the antennæ there is sometimes a brush of rough hair and scales. Palpi short, reaching only the front in most cases, sometimes reaching almost half way to the vertex. Terminal joint short and obtuse. Tongue short, functional. Eyes naked, fringed with long, overhanging lashes. Thorax quadrate, small or quite moderate, depressed, vestiture hairy, or with a mixture of scales and broad hair, usually flattened down, but sometimes a little roughened. Collar a

little produced centrally, excavated on each side of the middle to the base of the primaries where it is shouldered. Behind the collar there is a central thoracic crest which is usually divided and may extend to the thorax, though much reduced and not there divided. Abdomen extending to and usually much beyond the anal angle of the secondaries, untufted, slightly tufted or with prominent dorsal tufts, obtusely terminated, sides parallel, a little flattened. The general form of the primaries has been already described, the secondaries have the outer margin a little excavated below the apex, in other respects proportionate to the primaries. Legs stout, moderate or rather long, spurs well developed, otherwise unarmed and the tibiæ not spinulate. Vestiture of the under side dense woolly.

The venation is normal, secondaries with vein 5 from the cross vein remote from 4, ranging from obsolete to fairly developed, but always much weaker than any of the others.

The genus is readily recognized and fairly well defined, none of the characters varying widely. Such differences as occur are mentioned under specific headings.

The moths usually make their appearance in Fall, hibernate as adults and again fly a short time in early Spring. Some of the species are commonly found at night in or around the sap pails in the "bush" when maple sugar is made.

In geographical distribution the species range northwardly, but extend from the Atlantic to the Pacific. None are southern and none are peculiar to the plains—so far as known.

In studying this genus I have had before me, besides my own material, all that belonging to Drs. Barnes and Ottolengui, a selection of specimens from the U. S. National Museum and a few examples from Mr. Doll. I have also compared and looked carefully over the material in the Strecker and Neumogen collections as well as that in the American Museum of Natural History and the American Entomological Society.

Two color divisions are readily recognized, accompanied by a certain difference in habitus which is obvious enough, but impossible of strict definition.

The first of these divisions varies from creamy white to luteous and to bright red-brown; the second is of some shade of ash gray, ranging from almost white to dark blue gray or to greenish. In the first division the species are as a whole somewhat smaller, the markings better defined, and there is a dusky patch in the submedian

interspace between the median shade and the t. p. line. This spot is actually present in every species except *semiusta*, but not in every specimen. It is sometimes obscured by darker shadings as in *ferrealis* and sometimes washed out; but with a good series at hand it will be found in all except as above noted. There is also a more obvious dentation on fringes of the primaries, and the excavation below the apex of the secondaries is well marked. *Semiusta* is again an exception.

Added to these superficial characters the vestiture is uniformly hairy, and there is a very uniform type in the male genitalia. The harpes are rather long, in a general way parallel, the tip oblique and furnished with a small series of spinules, which may be at the extreme point only, or may occur along the entire oblique edge. Near the base at the upper margin is attached a moderately long, curved, corneous hook or clasper, and from this a corneous ridge extends diagonally to the tip. It extends even beyond the tip in the form of a mere point or as a slender curved process, varying in the species, and at about the middle of the ridge there is a broad tooth or spur of varying form. This description is general of course, and each species shows its own peculiar combination of these characters. It justifies the association of the species placed in the first series on color characters alone.

Semiusta is somewhat pale, rusty red-brown, without contrasts in maculation; all the lines even, and all the usual markings traceable. It is easily recognizable by the even fringes and the absence of the dark patch in the submedian interspace. The harpes of the male are rather narrow; the clasper is moderate in length, stout, curved, obtuse at tip; the tooth from the oblique ridge is long and sharply pointed, while the process extending beyond the tip is also long, slender and a little curved to the acute tip. There are only a few spinules at the extreme outer tip of the harpe.

Hemina and *disposita* are of a soft creamy gray color, the latter with a reddish or brownish shading that lightens it throughout and relieves the markings. In both there is a longitudal black line at the base; both have the ordinary spots of good size, outlined in black, and both have a long tooth from the t. a. line, almost reaching the t. p. line in the submedian interspace. In fact, so far as maculation is concerned, the two may be considered alike, the uniform soft creamy gray, free from any admixture of reddish, serving

well to distinguish *hemina*. In sexual structure the two differ obviously, though the resemblance between them is sufficiently close to indicate their near relationship.

In *hemina* the tip is somewhat irregular and spines extend for half its length. The hook or clasper is rather small and stout; the tooth from the oblique ridge is short, broad at base, narrows abruptly to a sharp point, and the extension beyond the tip tapers evenly and without curve.

In *disposita* the tip is even, and there are a few spinules at the extreme point only. The hook or clasper is, proportionally, longer and more slender; the tooth from the oblique ridge is long, square at base, with lateral projections at one-third of its length, thence a little curved to the tip. The extension beyond the tip is long, rather broad at base, then drawn out into a long point which is a little curved.

Bethunei, patefacta and *innominata* are pale species, ranging from whitish to luteous yellow or reddish. The markings are all fairly obvious, not strigate, the t. p. line for the most part broken into a series of geminate, venular dots. The s. t. line is marked by a preceding series of darker spots or shadings, or the terminal space is darker. The median shade is oblique from the costa between the ordinary spots to below the reniform, forming a sort of **V** shaped patch about that spot which is quite characteristic. There is no longitudinal black line at base; but in some very well marked specimens there is a false appearance of such a line caused by a series of black scales below the median vein.

Bethunei is the palest species, the ground being almost whitish in some examples, washed or mottled with luteous, the shadings of a deeper tint of this same color or of a silvery gray. As a rule the median shade is the most conspicuous portion of the wing; but in some cases the shadings before and beyond the s. t. line are also contrasting. The harpes of the males are long, the tips very long and oblique, with a series of small spinules along the edge from the point to the extension of the corneous ridge. The hook or clasper is moderate, stout. The tooth from the middle of the oblique ridge is very broad at base and narrows very abruptly to a slender point. The extension beyond the tip is an evenly narrowing spur of moderate length.

Patefacta resembles a darker, washed out *bethunei* with blackish secondaries and with an unusually prominent dark spot in the sub-

median interspace before the t. p. line. The species has been and can easily be confused with its ally; but the darker secondaries distinguish it readily. The male genitalia differ markedly. The clasper is shorter, broader and tapers irregularly to a small rounded tip almost from the base. There is a small patch of spinules on the surface of the tip and not at its edge only. The clasper or hook is rather small and stout. The oblique ridge is broad, its edge irregular, the tooth at its middle small, three pronged. The extension beyond the tip is rather short, irregular and drawn to a long point. Altogether this is totally different from the corresponding parts of *bethunei*.

Innominata, which is the species erroneously determined by Mr. Grote as *signosa* Wlk., differs at once by the reddish shading of the primaries and the blackish secondaries. The maculation of the primaries is almost exactly like that of *bethunei*, and some washed out examples are apt to be confusing until the uniformly darker secondaries and abdomen are noted. The male organs differ from the two last preceding. The harpes are narrow, elongate and taper along the lower edge toward a small, nearly pointed tip, edged with a few spinules. The clasper is much longer and not so stout as in the allied species. The edge of the oblique ridge is serrated, not produced into an obvious tooth, and it extends beyond the tip in a long, curved, pointed process.

Oriunda is a bright red-brown species, the median lines lost, but the s. t. line prominent and marked with white scales. The extreme base and the costal region of the primaries are marked with white. The reniform is filled with white, and the narrow, long, oblique orbicular is ringed with white. Altogether it is a very distinctly marked as well as rather a rare species. The harpes are moderate in length and narrow to a rather small oblique tip which is fringed at the edge with spinules. The hook or clasper is small and very stout, the oblique ridge has a rather long pointed tooth at about the middle and it extends beyond the margin in a short point a little before the tip.

Gausapata comes in here; but the species is known to me by the type only, which is in the American Museum of Natural History. Mr. Grote speaks of it as allied to *ferrealis*, but it is of a dull purple red, the primaries with a gray bloom. The median lines are indistinct and the reniform is a rusty yellow stain. There is no difficulty in recognizing this species, which is from California.

Ferrealis has the costal region, including the ordinary spots a reddish gray or yellow, while the rest of the wing is dull rusty brown, the lines all lost. There is no difficulty in separating off this form, which is the most strongly contrasted of this series. The male genitalia resemble those of *innominata* most nearly; but the clasper is shorter, there is a slender tooth from the oblique ridge, and the extension beyond the tip is stouter, the point blunt and less drawn out.

Amanda is a much lighter reddish gray than any of the other species, the transverse maculation obsolete, tending on the whole to become strigate. The ordinary spots are not defined and there is a reddish luteous shade through the median cell, extending beyond it to the margin. Flown specimens have an indescribable faded tinge that is characteristic. The male genitalia differ markedly from all the preceding. The harpes are broad, the tip is oblique, its extreme point with a very few marginal spinules. The clasper is rather small and very slender. The oblique ridge does not start at the clasper and ends before the tip. At its base there is a moderate, rather narrow process, pointed at the tip, and at its extremity it is produced into a slender, curved process, longer than the width of harpes.

Of the series of ashen gray species, there are a few that have no black longitudinal line or streak at base. This is a character that must be used with some caution, because it sometimes happens that a species which normally has such a line or streak loses it by fading, or, on the other hand, in some dark examples of the present series the black scales on the median vein may simulate a basal line. Nevertheless, with a reasonable series of normal specimens, there is no danger of confusion.

Contenta, *itata*, *fagina* and *longior* are the species belonging here, and the absence of this basal line is about the only thing that holds them together. Yet there is a similarity in the general type of genital structure, and it does not differ very markedly from that of the preceding series.

Contenta is a species of moderate size, the veins black marked, and the interspaces with more or less evident black lines. The distinctive feature is a series of four or more small black dots along the margins of the ordinary spots, resembling in that particular certain species of *Cucullia*. Everything is confused; but the ordinary

spots have a somewhat luteous shading that renders them obvious if not contrasting. The harpes of the male genitalia are very broad at base, narrow abruptly at about the middle, then broaden a little and are roundedly oblique to an acute superior tip, no part of which is set with spinules. The clasper is at the middle of the harpe, long, slender, very strongly curved. The corneous median ridge has a rather short, stout, flat, pointed central tooth and a somewhat longer and broader process at the lower angle of the tip.

Itata is a much smaller species, of a soft powdery gray which obscures, while it leaves traceable, most of the ordinary markings. There are no contrasts, and the only features that are at all relieved are, a little diffuse black spot in the lower portion of the reniform, and a similar patch in the submedian interspace where the t. p. line should be. No male has been seen.

Fagina is larger than either of the preceding and is a much paler gray; white powderings over the primaries and especially in the costal region, giving it a brighter appearance than usual in the genus. The veins are very narrowly black marked, and in the interspaces are blackish teeth, forming disconnected parts of the usual lines. The ordinary spots are practically lost, though the orbicular may be defined as an oblique and very irregular concolorous spot in some examples. The harpes of the male are long and narrow, tapering from outer fourth to an elongate narrowly rounded tip, which is not set with spinules. The clasper is at the middle, rather moderate in length and only a little curved. The oblique ridge has a broad tooth at the middle and a long, curved, pointed process extending from the middle of the oblique ridge, narrowing to a little beyond the rounded tip.

Longior equals the preceding in size, but is broader winged and seems larger, more robust. It is darker gray, much more strigate, and here a black basal streak is sometimes indicated. There is, indeed, a black streaking throughout the wing, the most obvious being through the submedian interspace and obliquely from below the reniform to below the apex. The latter is usually accompanied by a smoky brown shade which may extend throughout the centre of the wing. The male genitalia differ markedly from all previous forms. The long, narrow harpes have the upper edge broadly corneous, and at tip this is broadened and irregularly emarginate.

The clasper, arising behind the middle, is long, slender and well curved.

The following seven species, *emarginata*, *holocinerea*, *georgii*, *puella*, *oregonensis*, *winnipeg* and *unimoda*, have a slender black longitudinal line, which extends beyond the basal half line and is not turned into it to form an oval paler patch at the costal area of base.

Of these, three—*emarginata*, *holocinerea* and *georgii*—are so closely allied that their separation is in some cases a matter of tact rather than based on positive characters. They are local or Darwinian species and agree in a strigulate maculation of primaries, on which the median transverse lines are either lost or marked on the costal region only. The male genitalia are of one type, and while there are differences in each case they are not beyond the reach of individual variation supplemented by distortion in mounting. This last factor deserves mention here as it must be taken into consideration in all the following species of the genus. The structures are actually and proportionally large, strongly curved and convex, and the clasper not only curved into a hook, but also twisted inwardly and at an angle from the harpe. Flat mounting on a slide is therefore impossible without distortion; mounted in a cell no two specimens are so exactly in the same position, that seen at the same plane they give exactly the same figure. As all the sketches are made with the camera lucida, differences could be made to appear even where none exist. Wherever possible several mounts have been made for each species, and the one selected for figuring has been that which best gave what seemed to be the characteristics of the species.

In the three species under consideration the harpes are long, rather narrow, curved and convex; the tip is emarginate, the lower angle drawn out into an acute point, the upper into a narrow, blunt angle. The upper margin near the tip is serrated, and there is a curved enlargement almost at the base of the clasper, which is also toothed. The clasper is a long, curved and twisted corneous hook.

Emarginata is very whitish gray, the longitudinal streakings along the veins very narrow and inconspicuous, and the ordinary spots obsolete or only feebly marked. The s. t. line is indicated in all the specimens by a slightly darker shade, but it is not at all prominent in any sense or case. The species is quite as pale as any *fagina*, but has the black basal line obvious in all cases. The fig-

ures on Plates I and II should be referred to for the differences between the species here.

Holocinerea is decidedly deeper, more bluish gray, the ordinary spots being relieved, the reniform often with a faint reddish or brownish tinge. The streakings are evident throughout the primaries, and there is an obvious series of smoky or blackish spots preceding the s. t. line. There is no case where any doubt has arisen as between this and the preceding species.

Georgii is a little paler gray, less strigate than *holocinerea*, darker, better marked and with a more obvious s. t. shading than in *emarginata*. The median lines are better marked than in either of the preceding, and as a whole the size averages a little smaller than its allies. The two last mentioned species are much more closely allied than either is to *emarginata* and I hesitated as to their distinctness. There is, however, a certain habital difference which will, I feel convinced, justify the species when both forms have been studied in large series.

Puella is a bright species in which the maculation is neatly defined on a very pale ashen ground. The median lines and the median shade cross the wing, and the ordinary spots are completely defined by narrow black lines. All the specimens before me are females, but the superficial characters are, in this case, sufficient to place the species beyond all reasonable doubt.

Oregonensis is a near ally, but is smaller and the maculation is not nearly so well defined. The t. a. line is complete, but neither t. p. line nor median shade get much below the costa, while the basal space above the black streak is paler and the reniform has a slight reddish shade. The harpes of the male resemble those of *laticinerea*, but both angles of the tip are extended, the lower not nearly so much as the upper.

Winnipeg and *unimoda* are very obscurely marked forms which may become troublesome. Both are rather dull ashen gray, *unimoda* being the paler of the two. The black line at the base is often very obscure, so that it would seem almost referable to the series in which that distinction is wanting, but the orbicular is here well defined and there is no tendency to the strigate or denticulate type of maculation. Other specimens have the basal space above, a little paler, and in such cases resemble the *antennata* group very closely, but they are more evenly colored, the median shade is scarcely marked and the reniform is very imperfectly defined.

Winnipeg is the darker of the two and a little smaller. There are no contrasts in maculation and the orbicular is scarcely paler than the rest of the wing. The genitalia of the male are characteristic and tend to combine features of both the *oregonensis* and the *antennata* type. The harpe is large, curved and convex, the upper angle of the emarginate tip produced, the upper margin with a rounded protuberance, the edge of which is dentate. The clasper is a very long curved hook of moderate thickness.

Unimoda is larger and paler gray, the orbicular better defined and distinctly more whitish than the rest of the wing, so that it is, obviously, the most conspicuous feature of a very inconspicuously marked form. The male harpes are altogether different from any others, the tip being acutely notched, the margins even, though not parallel. The clasper is a very long, curved and twisted hook.

In all the remaining species the black basal dash extends only to the basal half line, usually making a junction with it so as to inclose a paler patch on the costal portion of the base. This feature is variably distinct, of course, but traceable in even the most obscurely marked *grotei* that I have seen.

Some of the species have the median lines connected by a black longitudinal line, either crossing the entire median space or extending from the claviform to the t. p. line. Most of the species have no connection of this kind and these will be first considered.

Laticinerea and *grotei* agree in dull, ashen gray color; primaries with the space between the ordinary spots not at all darker, and the reniform without a trace of reddish or brown shade or flush.

Laticinerea is the larger and darker of the two, the fore wing having a peculiar rough appearance as from uplifted black scales. Out of this the orbicular is relieved by whitish powderings, and the s. t. line is marked by contiguous, black, sagittate preceding spots. In the male the harpes are larger and convex, narrowing rather regularly to an obliquely excavated tip, the upper angle of which is long drawn out. The lateral margins are even, but there is a triangular flat process arising toward the middle, which is rough and irregularly set with smaller hair. The clasper is a long, slender, curved and somewhat twisted hook.

Grotei is smaller and of a more even gray throughout. The vestiture is comparatively smooth, and the orbicular does not stand out in contrast to the ground, though it may be as pale as in the preceding species. The dusky shade before the s. t. line is rarely contrast-

ing. Line for line, mark for mark and shade for shade, the two species here grouped may be made to agree, and it is not surprising that they have been considered identical. Yet with the two forms separated out in a good series of each, their difference is obvious. With single examples there may be difficulty unless reference be had to the male genitalia.

In *grotei* the harpes are very broad at base, constricted a little before the middle at the origin of the clasper, where also they curve inward and upwardly, enlarged from the inferior margin, where there is a crescent of saw teeth, and again narrowed to an irregularly broken tip.

It may be said here that Mr. M. V. Slingerland has bred these species as well as *antennata* which immediately follows, and, while they are similar, the larvæ yet bear out the distinctness of the species.

All the other species in this series, in which the median lines are not connected, have the reniform more or less flushed with reddish or brown, and the space between the ordinary spots darker, excepting only *viridipallens*, which is recognizable by its peculiar greenish gray primaries.

Antennata tends to the preceding species, but is smaller and shorter winged, besides being much brighter in color. In comparison with its associates it is less contrastingly marked, the median lines more or less incomplete and the reniform narrow, centrally a little constricted. The median shade is not prominent and the primaries have a reddish rather than a bluish flush. The harpes of the male are moderately broad and narrow irregularly from both sides to a long, bluntly rounded, very narrow tip. The inferior margin has two irregularly toothed excrescences. The clasper is a short, stout, curved hook. This species has also been confused with *grotei*, but is abundantly distinct.

Torrida is blue gray, except for the reddish flush in the reniform. It is longer winged than any other in this group and finds its nearest ally rather in *antennata* than in *tepida* to which the brightness at first seems to ally it. This is carried out by the fact that the orbicular extends below the median vein into a suborbicular, as is uniformly the case in the species allied to *grotei*. The genitalia of the male resemble those of *unimoda* in the notched tip, and those of *grotei* in the toothed, irregular extension from the lower margin of the harpe. The clasper is long, slender, curved and twisted.

Tepida is again smaller and shorter winged. It is somewhat less blue in tint, the median shade prominent, reniform broad, the sides rounded, and the orbicular not extending below the median vein. The harpes of the male narrow from both sides to the tip, where they are drawn out into a long, slender, acute process. The clasper is moderately long, only a little curved and tapers to a point.

Querquera has much the same ground color, but the maculation is not contrastingly written. The black markings at base are prominent; the space between the ordinary spots is black; the reniform is brownish, and there are two black patches preceding the s. t. line. All else is subdued or lost and the species looks odd as well as distinctive. It is probable that this species on a lichen covered tree is practically invisible so long as it remains quiescent. In genital structure it resembles *tepida;* but the clasper is much stouter and is bluntly terminated at tip. At the base of the clasper is a two-pronged corneous process which seems to serve as an accessory to it.

Viridipallens is of a uniform greenish gray and all the maculation is present, but it is all smoky or of a darker gray, without obvious contrasts of any kind and without a distinct black point anywhere in the wing. This form would be invisible on the trunk of a beech or poplar, or on a lichen covered stone. The species is very rare and I have no male for dissection.

Pexata and *dilatocula* are large, smoky brown species, with large reniform and a black line extending from the tip of the claviform to the t. p. line, thus connecting with the t. a. line. The transverse maculation is complete, and the s. t. space is somewhat paler than the rest of the wing before the s. t. line. They differ from all the rest of the species in the prominent abdominal tufts.

Pexata is the darker of the two and has a rough, squamose appearance. The ordinary spots, though large, are not contrasting or prominent, and there are no smooth shadings in the fore wings. The harpes of the male are moderate and narrow somewhat to an obtusely rounded tip, which is inwardly fringed with spinules. The upper margin near the tip has two prongs, arising from a corneous ridge, the outer shorter and pointed, the inner longer, more even and rounded at tip. The clasper is a short, thick, blunt, corneous process. In this structure the insect is nearer to the type of the first series than to those with whom its ornamental features associate it here.

Pexata has been considered as a form of the European *ingrica* and has a superficial resemblance to it. But the male characters of *ingrica* are entirely different and the two are not even closely related.

Dilatocula has somewhat broader, more trigonate wings, the apices a little more pointed. The vestiture of the primaries is smooth, more bright, the ordinary spots contrasting. The orbicular is round and clear gray. The reniform is very large, almost as broad as long, with a bright reddish flush and no smoky filling. It has a close general resemblance to *pexata*, but is larger, and owing to the wing form, has a different habitus. The harpes are broad and taper to a narrow, squarely cut-off tip which is fringed at the edge with spinules. Along the upper margin is a corneous thickening from which arise two large, thick, pointed thumbs or processes; the inner being the thicker and tapering abruptly to a blunt tip. The clasper is a short, thick, slightly curved process, cut off at tip.

Lepida and *thaxteri* are totally different in appearance from all the other species, seeming mottled and with a black bar between the median line in the submedian interspace.

Lepida is deep blue-gray, without reddish shadings on primaries, the markings not greatly contrasting. The secondaries have a distinct reddish tinge. The male genitalia are very simple; the harpes are broad at base, nearly even to about the middle, whence they narrow evenly to a pointed tip. The clasper is moderate in length and thickness and is curved, sickle shape.

Thaxteri is shaded with reddish and has the maculation prominently contrasting, so that it seems marbled. The chief reddish shades are at the base, along the internal margin and over the reniform. It is somewhat difficult to describe the genitalia of the male. The harpes narrow abruptly at about the middle, the tip is small, oblique, set with spinules along the edge. Obliquely across this harpe extends a broad, corneous plate, which develops in one direction a curved, toothed process, and in the other a long, somewhat scoop shaped spur. The clasper is moderately long, not much curved and pointed at tip.

Of the other species heretofore referred to *Xylina, capax, dentilinea* and *carbonaria* belong to other genera, leaving none that I have not actually seen.

While, in several series, the species are closely allied, yet, as a whole, they are fairly marked. Arranged in tabular form, it requires a little tact to place and recognize the species; but if the character of the basal streak be not too strictly interpreted the following table should serve to identify the species:

TABLE OF SPECIES.

1. Species with a reddish, brown or yellowish shading, never ashen or blackish gray ..... 2.
   Ashen or blackish gray species ..... 7.
2. Fringes of primaries dentate; t. a. line with a great outward tooth in the submedian interspace, followed by a dusky patch connecting with the t. p. line ..... 3.
   Fringe of primaries even; t. a. line evenly outcurved in the interspaces, without a long tooth approaching the t. p. line; color reddish. **semiusta.**
3. Creamy or reddish gray, with a distinct basal black line; ordinary spots defined ..... 4.
   Whitish yellow to reddish luteous, no obvious basal black line, orbicular obscured ..... 5.
   Red or gray-brown, with an obscure, brown or black basal line; orbicular elongate, decumbent, maculation tending to become strigate and lost .... 6.
4. Ground color soft creamy gray; markings black, but not distinctly relieved. **hemina.**
   Ground color with a distinct red or brownish shading; markings distinctly relieved ..... **disposita.**
5. Whitish, with luteous washings and shadings, maculation fairly defined; secondaries paler ..... **bethunei.**
   Somewhat more grayish, maculation washed out; secondaries smoky or blackish ..... **patefacta.**
   Luteous, with reddish shadings, maculation fairly defined; secondaries blackish ..... **innominata.**
6. Bright red-brown; costa marked with white; ordinary spots ringed with white; s. t. line white marked ..... **orimda.**
   Uniform purplish red, with a gray bloom, not strigate; reniform a rusty yellow stain ..... **gausapata.**
   Costal region yellowish or grayish; lower portion of primaries dark rusty brown, obscuring all maculation; ordinary spots not white ringed; s. t. line luteous ..... **ferrealis.**
   Uniform rusty and gray streaked; all the maculation obscured; ordinary spots evident ..... **signosa.**
   Washed out reddish gray, streaky, all maculation as well as the ordinary spots lost ..... **amanda.**
7. No black basal streak or longitudinal line ..... 8.
   A slender black longitudinal line extending beyond the basal half line and not in any way joined to it ..... 9.
   A black line from the base extends to and connects with the basal half line, forming a sort of curved mark at base which is often margined above by paler scales ..... 13.
8. With short fine black streakings in the interspaces; a series of s. t. spots; ordinary spots marked by a number of black dots ..... **contenta.**
   Uniform soft ashen gray, with slender black lines in the submedian interspace only; ordinary spots visible but not defined ..... **itata.**
   Costa a little white marked; veins narrowly black lined and, in the interspaces, are disconnected dentate lines, as if parts of very strongly dentate median lines; ordinary spots practically lost ..... **fagina.**

A smoky shading through the center of the primaries; irregular interspaceal black lines and teeth; an oblique smoky subapical shading; ordinary spots visible in most specimens and sometimes defined....**longior.**

9. Maculation obscured, strigulate; median lines lost or traceable only in the costal region.....10.

Maculation not strigulate; median lines at least traceable throughout or distinct.....11.

10. Ashy white, powdery; veins black streaked, markings obsolete or only feebly marked.....**emarginata.**

Bluish ash-gray; veins black streaked, s. t. line distinctly marked by sagittate spots.....**holocinerea.**

More even, less strigate, ashen gray; t. a. line feebly traceable across the wing.....**georgii.**

11. Maculation clearly written on a whitish gray ground, not strigate; t. p. line and median shade complete; reniform without reddish shading, not strigate; basal black line distinct, the space above it not in any way contrasting.....**puella.**

Maculation less clearly written; t. p. line and median shade not obvious below middle of wing; reniform with a faint reddish shading; basal streak distinct, space above it paler, contrasting....**oregonensis.**

Maculation obscurely written on a powdery, dull ashen ground; basal black line faintly marked, sometimes hardly traceable.....12.

12. Smaller, darker, more powdery; reniform broader, orbicular less contrasting. **winnipeg.**

Larger, paler, less powdery; reniform narrow, orbicular somewhat contrasting. **unimoda.**

13. A black bar connects the median lines in the submedian interspace; maculation marbled.....22.

A black line extends from the tip of the claviform to the t. p. line; reniform very large and broad.....21.

No connection between the median lines; ordinary spots normal.....14.

14. Primaries more elongate, dull ashen gray; space between ordinary spots not darker; reniform not marked with reddish.....15.

Primaries shorter, brighter in color, more contrasting; space between ordinary spots always darker, sometimes contrasting; reniform more or less obviously shaded with reddish.....16.

Primaries uniform greenish gray.....20.

15. Powdered with black scales so as to give a rough, squamose appearance; orbicular white powdered, oblique, contrasting; s. t. line made prominent by distinct sagittate black spots.....**laticinerea.**

Paler gray, not or not so much powdered, smoother; orbicular not contrasting; s. t. line not prominently marked.....**grotei.**

16. Median lines not well marked; t. p. line partly obsolete; reniform narrow, constricted centrally.....**antennata.**

Median lines complete, well marked; reniform large.....17.

17. Ground color ashen gray.....18.

Ground color greenish gray.....19.

18. Larger, longer winged; median shade not prominent; reniform with sides subparallel; suborbicular present.....**torrida.**

Smaller, short winged; median shade prominent; reniform almost as broad as long, sides rounded; no suborbicular.....**tepida.**

19. All the lines well marked; s. t. line preceded for its full length by black spots.....**baileyi.**

All the lines indistinct; s. t. line marked by a geminate black spot opposite anal angle and by another opposite cell.....**querquera.**

20. All the lines and marks present, none of them in the least contrasting. **viridipallens.**

21. Dark, blackish brown; vestiture very rough, squamose; orbicular oblong, oblique, not contrasting; reniform reddish and smoky filled. **pexata.**

Color as before; vestiture more even; orbicular round, clear gray; reniform very large, contrasting, reddish, without smoky filling...**dilatocula.**

22. Maculation not prominently contrasting, no reddish shadings in primaries; dark blue-gray.....**lepida.**

Maculation prominently contrasting, with reddish shades at base, along internal margin and over reniform.....**thaxteri.**

Xylina semiusta Grote.

1874, Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 228, *Xylina.*

General color of head, thorax and primaries a powdery, rusty red over a luteous base. Secondaries and abdomen more yellowish. Head and thorax immaculate. Primaries with the normal maculation all traceable, marked rather by paler included shades, than by defining lines. Basal half line marked on costa, yellowish. T. a. line geminate, the included space yellowish, defining lines diffuse, scarcely darker than ground. In course outwardly oblique, a little outcurved in the interspaces, most obviously so below the median vein. T. p. line rather evenly and slightly sinuate, a little drawn in opposite the anal angle; inner defining line obscure, a little lunulate, the outer a series of black, white centered venular dotlets; included space broad and a little yellowish. S. t. line paler luteous, defined by the darker, smoky, terminal space. There is a series of small, blackish interspaceal terminal spots. Median shade a little darker red or brown, diffuse, darkening the outer portion of the median space, but not markedly. Orbicular moderate, oval, oblique, narrowly outlined in yellow and a little lightened by yellowish scales. Reniform moderate in size, upright, little or not at all constricted centrally, annulate with yellowish, filled with smoky shadings above and below which give it in some instance a figure-8 appearance. Secondaries immaculate, save that the veins are little darker and the fringes a little paler. Beneath powdery, all wings with a discal spot, primaries with terminal space usually a little paler, secondaries with usually an extra median dusky line.

Expands 33–35 mm. = 1.32–1.40 inches.

Hab.—Canada, New England States, northern New York.

This species differs from all the others by its color, its very even ornamentation lacking all contrasts, by the even fringes of the primaries and by the entirely hairy vestiture. It is not a common form, and I have not had it from any point in New Jersey. The

antennæ of the male are closely ciliate, the edges of the joints a little marked. Four males and females are under examination, showing no evidence of notable variation. Nor have I seen any appearance of such in other collections.

Xylina hemina Grote.

1879, Grt., Bull. U. S. Geol. Surv., v, 202, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, *Xylina.*

Ground color of head, thorax and primaries a dull, creamy gray, powdered with smoky or black scales. Abdomen and secondaries smoky, the fringes pale, contrasting. Head with a black line across the middle of the front. Collar with a black line below the tip. Primaries with all the maculation present, fairly well written, median lines geminate, all the lines well marked on the costa. Basal half line rarely complete, but sometimes it meets a black basal streak, inclosing a somewhat paler basal blotch. This basal black streak becomes somewhat diffuse inferiorly and sometimes extends almost to the t. a. line. T. a. line broken, the defining lines very slender, inner often obsolete, included space concolorous, strongly dentate, the outward tooth in the submedian interspace reaching nearly to the t. p. line and joined to it by a black shade spot. T. p. line rather even, well outcurved over the cell and a little sharply drawn in below vein 2, leaving a wide s. t. space. A series of geminate venular dots forms the outer margin of the t. p. line. S. t. line pale, irregularly sinuate, preceded by small blackish shadings opposite the cell and anal angle, and followed by larger blotches at the same points. There is a broken, black terminal line. Median shade usually evident and sometimes distinct, always darkening the space between the ordinary spots and usually marked from the lower margin of reniform to the margin. Orbicular irregularly oval, oblique, outlined in black, sometimes concolorous, sometimes smoky filled and then annulate with gray. Reniform upright, a little oblique, larger superiorly, black ringed, sometimes concolorous, sometimes smoky filled and then annulate with pale. Secondaries smoky or blackish, with a darker discal lunule, fringes whitish. Beneath, primaries with disk blackish, terminal space gray, powdery; secondaries gray, powdery, with an extra median blackish line. All wings with a large black discal spot.

Expands 35–40 mm. = 1.40–1.60 inches.

Hab.—Canada; New England; Northern New York in September; Volga, South Dakota; Decatur, Illinois, April 8th; Cartwright, Manitoba; Winnipeg, Manitoba.

Five males and one female are under examination. The maculation is nowhere at all contrasting, and there is a tendency to a blackish suffusion, which is strongly marked in the specimen from Cartwright, Manitoba. The vestiture is mixed, fine and flattened hair, the anterior divided crest very distinct. The male antennæ are ciliated, joints a little marked.

Xylina disposita Morrison.

1874, Morr., Bull. Buff. Soc. Nat. Sci., ii, 116, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus. 227, *Xylina.*

Ground color of head, thorax and primaries stone gray, with a reddish tinge

throughout. Secondaries smoky, the fringes paler or even whitish. Head with superimposed tufts obvious, forming—in good examples—two shelves, between which the antennæ arise. A deep brown line crosses the middle of the front and below this there is a brownish shade. Sides of the palpi blackish. A narrow black line just below the tip of the collar, sometimes only extending around the base of the divided crest. Patagiæ with a blackish line at the base of the primaries. Abdomen with loose hair at base and little scale tufts on the dorsum, of which that on the third segment is a little prominent in good specimens. A black streak at base, extending to the basal half line and a little diffuse inferiorly. Basal line geminate, brown, very oblique, broken, terminating in a blackish blotch on the basal streak. T. a. line geminate, brown or black, broken, very irregular, the long tooth in the submedian interspace in some cases actually reaching the t. p. line so that the median shade crosses the loop instead of between the two lines. T. p. lines with a long outenrve over cell, drawn in below reniform, inner portion slender, denticulate, the outer a series of venular dots. S. t. line of the ground color, irregularly sinuate, preceded by a broken, rusty brown shading, best marked opposite the cell and anal angle, followed by blackish shadings at the same points. These shadings are usually prominent, and sometimes fill a large part of the terminal space. A series of small, black, terminal marks. Fringes interlined with dark brown. The median shade is distinct on the costa, brown or smoky, extends obliquely and darkens the space between the ordinary spots—then is broken, a little diffuse, and runs parallel close to the t. p. line, becoming blackish at the point where the two lines almost touch, and thus connecting them. The orbicular is moderate in size, black ringed, oval, oblique, the centre usually a little dusky. Reniform of good size, broad, a little oblique, upper portion a little larger, black ringed, centre a little dusky. Secondaries with veins a little darker and the discal spot of under side visible above. Beneath, primaries smoky to a pale, powdery terminal space; secondaries with an extra median smoky line. All wings with a large discal spot.

Expands 35–40 mm. = 1.40–1.60 inches.

Hab.—Canada; New England States; Northern New York; Wayne Co., Pennsylvania; Fort Madison, Iowa.

Sixteen males and one female show little variation. The shade of the ground color differs a little, as does the relative distinctness of the markings; but on the whole the specimens are very much alike. The antennæ of the male are ciliated, and there is a series of raised black scales along the inner side toward base. The thoracic vestiture is mostly flattened hair.

Xylina bethunei Grote and Robinson.

1868, G. and R., Trans. Am. Ent. Soc., i, 354, pl. 7, f. 56, *Xylina*.

1869, Bethune, Can. Ent., i, 86, *Xylina*.

1871, Grt., 6th Rept. Peab. Ac. Sci., 33, *Lithophane*.

Ground color of head, thorax and primaries creamy white, shaded with luteous and powdered with black atoms. Abdomen and secondaries smoky, with a yellowish tinge, often fading to gray, fringes white or nearly so. Head with superimposed tufts; front with a brown transverse line below the middle. Collar with a narrow brown or blackish line below the tip, but this is often obsolete.

Patagiæ with a smoky tinge at base of primaries. A series of small abdominal tufts is found in perfect examples. Primaries more or less yellow shaded, the triangular space between the outwardly bent median shade and the t. p. line being the darkest portion of the wing. Basal line geminate, luteous, marked in the costal space only. T. a. line geminate, marked by black dots on the veins, luteous and with outward teeth in the interspaces. T. p. line abruptly bent on the costa, then as a whole very nearly parallel with the outer margin, best marked by a geminate series of small venular dotlets. S. t. line of the ground color, a little irregular, preceded by a continuous, though somewhat irregular luteous or brownish shading. Terminal space more or less completely gray powdered. A series of small, black, terminal crescents. Median shade luteous or a little brownish, forming with the t. p. line a V-shaped space, which is a little darker than the rest of the wing. A blackish blotch unites the median lines in the submedian interspace. Orbicular oblique, irregular, not well defined. Reniform large, upright or a little oblique, larger superiorly, outlined in rusty brown and sometimes filled with brownish or pale gray, leaving a concolorous annulus. Beneath pale, powdery, varying a little in tint, all wings with a more or less obvious, outer, dusky line and a distinct, blackish discal spot.

Expands 35–40 mm. = 1.40–1.60 inches.

Hab.—Canada, west to Winnipeg, Manitoba; New England, Middle and Central States; Columbus, Ohio; Central Missouri; Berkeley, Colorado.

Fourteen males and five females are under examination and show little variation. There is a little difference in the amount of yellow, dependent somewhat upon whether the specimen was taken in Fall or in Spring, and so there is a variation in the amount of black powdering, especially in the terminal space. The antennæ in the male are ciliated.

This is the most abundant and widely distributed form of this pale series, extending as it does to the Rocky Mountains, westwardly, and to the District of Columbia and Missouri on the South. It will probably be found in all except the South Atlantic and Gulf States, as far west as the Rockies at least.

Xylina patefacta Walker.

1858, Wlk., Cat. Brit. Mus., Het., xiv, 1733, *Xylina.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 231, *Xylina.*

Head, thorax and primaries reddish gray; abdomen and secondaries deep smoky or blackish, fringes pale, with a reddish tinge. Head with superimposed tufts, below which is a black frontal line. Collar with a traceable black line below the tip, around the divided crest. The maculation of the primaries is all obscured. The usual lines are marked by geminate spots on the costa and by geminate black venular dots, indicating a course similar to that in the allied species. Median shade distinct, from the costa oblique to the lower part of reniform, then lost in the very distinct blackish patch before the t. p. line in the submedian interspace. S. t. line of the ground color, a little irregular, preceded

by a narrow, rusty brown shade which is not continuous, and followed by a vague gray powdering, which sometimes darkens the terminal space. A broken, brown, terminal line is fairly evident. Orbicular practically obsolete, *i. e.*, it is traceable by the general character of the shadings, but not in any way outlined. Reniform a little paler than the surrounding shade, not outlined, large, upright, the upper portion larger than the lower. Beneath powdery, reddish gray, primaries except terminal space a little darker, secondaries with a vague exterior line; all wings with a blackish discal spot.

Expands 32–35 mm. = 1.28–1.40 inches.

Hab.—Canada; Monroe Co., New York; Gloucester Co., New Jersey, March 16th.

Three male specimens only. Examples of this species may be mixed with *bethunei* or *signosa;* but I do not remember seeing any in the collections recently examined. The male antennæ are ciliated.

Xylina innominata Smith.

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, *Xylina.*

signosa Grt. not Walker.

1874, Grt., 6th Rept. Peab. Ac. Sci., 33, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, pr. syn.

Head, thorax and primaries reddish luteous, with a rusty red powdering. Abdomen reddish gray, the dorsal tufts minute at best and present only in perfect examples. Head with a brown line below the usual tufts. Collar with an indefinite brown or blackish line—which may be obsolete—below the tip, at the base of the rather low divided crest. Primaries with the maculation imperfect, yet all easily recognizable. Basal line geminate, oblique, brown, marked on the costa and by dots on the median vein. T. a. line marked by geminate, black, venular dots, and in exceptional specimens by brown, interspaceal, outward angles. T. p. line marked by geminate black, venular dots, parallel with outer margin, a curved black line in the submedian interspace marking the limit of the prominent brown or blackish patch connecting with the t. a. line. S. t. line concolorous, preceded by a rusty shade, which is more or less broken and followed by black powderings in the terminal space, which may darken the veins only, may group into geminate spots opposite anal angle and cell, or may, rarely, darken the entire terminal space. A series of black or brown terminal lunules. The median shade is obvious in all specimens and prominent in some; broad, oblique from costa between the ordinary spots, lost in the blackish patch in the submedian interspace, and traceable below this as a narrow, diffuse, brown line. Orbicular not defined, usually traceable by its slightly paler tint, large, oblique, oblong. Reniform large, broader above, a little constricted centrally, outlined in rusty brown, usually with a little dark filling inferiorly. Secondaries dark smoky, with a yellowish tint, fringes yellow, a darker discal lunule and a broken, darker terminal line feebly visible. Beneath reddish, powdery, disc of primaries often blackish; secondaries often with an exterior dark line, all wings with a discal spot.

Expands 35–40 mm. = 1.40–1.60 inches.

Hab.—Quebec to Vancouver; New England and Middle Atlantic States; Colorado; Seattle, Washington.

Eleven males and seven females are under present observation. The species is not rare and is very widely distributed. I have no record of its occurrence south of Northern New Jersey; but it extends through British America and the Northern United States, from the Atlantic to the Pacific, with very little variation.

The antennæ of the male are ciliated, but not much more so than in the female. The thoracic vestiture is mixed, fine and flattened hair, with the latter somewhat predominating.

Xylina oriunda Grote.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 160, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 228. *Xylina.*

Head, thorax and primaries red-brown. Abdomen and secondaries smoky, with a brown tinge, the fringes concolorous except at the tip, where they are whitish. Head with a black line below the ordinary tufts; antennæ with yellow scales at base, and in the male with black, elevated scales thickening the basal third on the inner side. Collar tipped with yellow scales, below which, at the base of the rather low, divided crest, there is a narrow black line. Primaries with the costal region yellowish white to the t. p. line, interrupted by shades of the ground color and by the geminate median lines. There is a small, black, longitudinal line at base extending to the basal half line, and above this the basal space is whitish. T. a. line marked in the pale costal space and then lost, except for the black tooth in the submedian interspace, which is connected by a black patch with the t. p. line. T. p. line marked on the costa, thence indicated by geminate white dots on the veins, except in the submedian interspace, where a curved black line limits the blackish patch which extends from the outward tooth of the t. a. line. S. t. line whitish, slender, irregularly though not strongly sinuate, emphasized by a fragmentary, somewhat more rusty brown shade and by a slightly darker terminal space. Black, followed by pale scales base the concolorous fringes, which are narrowly cut, opposite the veins, by pale lines. The median shade is marked across the costal space only. Orbicular narrow, oblique, oblong, white ringed. Reniform moderate in size, a little enlarged above, white ringed and superiorly white powdered. Beneath primaries smoky, terminal space brown, powdery, as is the entire costal region; discal spot obvious. Secondaries powdery, reddish brown in the costal region, becoming more yellowish inwardly, with a smoky exterior line and a distinct, smoky discal spot.

Expands 34–37 mm. = 1.36–1.48 inches.

Hab.—Canada; Pennsylvania; Wisconsin.

There is only a single male before me at present and I have seen, perhaps, half a dozen others, recently; none of them differing in any important particulars from the description just given. There seems to be a little variation in the depth of the ground color, and in the extent of the pale powdering along the costa; but there is no chance of mistaking the species. The antennæ of the male are ciliated and a little scale thickened at the base.

The thoracic vestiture is a mixture of fine and flattened hair.

Xylina gansapata Grote.

1883, Grote, Papilio, iii, 77, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, *Xylina.*

Allied to *petulca.* Entirely of a dull purple-red, the primaries showing a gray bloom. Fore wings with the two mesial lines brown, subparallel, outwardly oblique from costa, more or less fragmentary and indistinct. Reniform a rusty yellow stain. Claviform indicated in pale, with a small, brown, following mark. Hind wings and abdomen dull red. Beneath, a brown discal spot on secondaries. Frontal tuft a little darker beneath.

Hab.—Soda Springs in October (Behrens).

One bred specimen, the wings on the left side a little unexpanded. The marking are simple and the species readily detached. It is much darker and more richly colored than its eastern allies, *petulca, ferrealis,* etc.

The above is, in essentials, Mr. Grote's description.

The type is in the Edwards collection, and unlike any other of the species in color, hence easily recognizable. The "claviform" referred to in Mr. Grote's description is the long tooth of the t. a. line characteristic of this series, and the brown following mark is as in *ferrealis* and the allied forms. The thoracic crest is very prominent but not so obviously divided. The abdominal tuftings are not obvious in the specimen.

Xylina ferrealis Grote.

1874, Grt., 6th Rept. Peab. Acad. Sci., 32, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, *Xylina.*

Head, thorax and primaries dull red-brown, powdered with gray scales. Head with a deep brown line below the ordinary tufts, the space between them gray. Collar gray tipped, a more or less obvious black line bordering this gray tip below. Thoracic crest prominent in good examples and gray powdered. Patagiæ also gray powdered, the vestiture fine hair and flattened scales. In many specimens the collar inferiorly is of the same color as the costal region of primaries, and the thoracic disc agrees with the disc of primaries. Primaries with costal region more or less gray from base to apex, a dark brown shade extending through the centre of the wing. A slender, obscure, black longitudinal line margins the pale costal space basally. Basal half line marked by geminate, brown, oblique lines across the basal space. T. a. line marked by geminate, oblique brown lines on costa, and thereafter chiefly by pale included shades, thus defining the usual long outward tooth in the submedian interspace. T. p. line geminate, brown across the pale costal space, punctiform and geminate where traceable on the veins below this point. S. t. line yellowish red, diffuse, incomplete, irregular, lost in the costal space. Median shade marked between the ordinary spots, and sometimes across the costal region. A series of black terminal lunules and a pale line at the base of the fringes. Orbicular narrow, oblique, ringed with luteous, centre grayish or reddish, sometimes concolorous with costal region, approaching close to and sometimes touching the reniform. Reniform

moderate, larger superiorly, a little contracted at the middle, pale ringed, of the pale costal shade, except inferiorly, where it is brown shaded. The pale outward tooth of the t. a. line at first sight resembles a claviform spot, Beneath powdery, disc of primaries blackish, costal and terminal region reddish gray; secondaries with a smoky extra median line; all wings with a smoky discal spot.

Expands 34–42 mm. = 1.36–1.68 inches.

Hab.—Canada; New England; Northern New York; Hopatcong, New Brunswick, New Jersey.

Six males and seven females are at hand and vary only in the amount of contrast between the costal and central portions of the wing. The ordinary spots are extensions of the pale costal space and are usually well relieved.

In the males the antennal joints are ciliated, and the basal third is a little thickened by black scales on the inner side.

Xylina signosa Walker.

1857, Wlk., Cat. Brit. Mus., Het., xi, 627, *Xylina.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, *Xylina.*

petulca Grote.

1874, Grt., 6th Rept. Peab. Ac. Sci., 31, *Lithophane.*

1891, Butler, Entomologist, xxiv, 242, pr. syn.

1893, Smith, Bull. 44, U. S. Nat. Mus., 227, pr. syn.

Head, thorax and primaries reddish gray, streaked and shaded with rusty brown, sparingly powdered with black. Abdomen paler, uniform, the dorsal tuftings well marked, that on the third segment prominent. Secondaries smoky, with a yellowish tint, the fringe smoky. Head with a brown line below the usual tufts, or entirely brown. Collar with a black line, above which it is gray tipped at the base of the well-marked divided crest. Patagiæ powdered and marked with gray, and with a gray patch at base of primaries. Primaries with the markings incomplete, tending to appear strigate, the veins being darker brown. A slender, longitudinal black line at base. Basal line geminate, brown, very oblique across the costal paler space. T. a. line brown, geminate, very strongly dentate in the interspaces, marked by small, black venular dots. T. p. line marked by geminate, black venular dots, except in the submedian interspace, where the usual blackish patch connects the two lines. S. t. line of the ground color, narrow, irregular, not well or completely defined, preceded by small, rusty brown spots, best marked opposite the anal angle and the cell, an oblique smoky shade extending through the terminal space at these points. There is a series of small, black, terminal lunules in the interspaces, and of small black dots on the veins. Median shade usually distinct across the costal space and oblique between the ordinary spots, sometimes suffusing the space between median lines at the middle, and narrow, indefinite, below that point. The orbicular is long, oblong, oblique, narrowly outlined in brown and often attached to or connected with the reniform. The latter is large, a little paler or annulate with paler, not outlined, a little enlarged above. Beneath reddish, powdery, disc of the primaries darker; secondaries with a complete, primaries with an incomplete outer dusky line; all wings with a large discal spot.

Expands 37–43 mm. = 1.48–1.72 inches.

Hab.—Canada; New England States; New York; Northern New Jersey; Central Illinois; Washington, D. C.

Seven males and thirteen females are at hand, differing considerably in shade of brown and the amount of contrast. Some are distinctly gray, while others lack all trace of this shade and are obviously brown. In all of them the strigulate character of the maculation is apparent, and this, with the ground color, will distinguish the species. The male antennæ are as in *ferrealis*, as is the thoracic vestiture.

Xylina amanda n. sp.

Head, thorax and primaries reddish gray, usually more or less washed out, strigate. Abdomen more even, varying from reddish to almost whitish. Secondaries smoky, with a yellowish tinge, sometimes much paler, fringes paler than the ground. Head gray at the base of the antennæ between the tufts, a brown or black line below. Collar gray tipped above a black line at the base of the prominent divided crest. Patagiæ gray powdered, a whitish line above the insertion of the primaries, where also there is a white spot. Primaries with a slender black streak at base, above which, to the costa, is a somewhat paler gray shade. Basal line barely indicated by geminate costal spots—in one example only. T. a. line geminate, marked on costa by small black venular dots, and by a long blackish tooth in submedian interspace. An even, luteous or reddish shade extends through the cell and obliterates all, save the lower portion of the reniform which is brown. T. p. line marked by a more or less complete series of geminate, venular black dots, which are unusually close to the outer margin. S. t. line marked only by a pair of preceding rusty brown spots opposite anal angle and cell, and from these an oblique brown shade extends through the terminal space. A series of black terminal lunules, the veins also being black marked toward the margin. Beneath powdery, primaries with terminal space paler; secondaries with a smoky exterior line; all wings with a large, smoky discal spot.

Expands 39–42 mm. = 1.56–1.68 inches.

Hab.—Franconia, New Hampshire; Calgary, Canada; Winnipeg, Manitoba; Vancouver, British Columbia; Pullman, Washington; California.

Four males and two females are under examination. Three of them bright reddish gray and three of them faded and washed out, with a mere trace of reddish. As the latter lack fringes and are otherwise flown I assume that they are faded; yet it is not beyond the bounds of possibility that two species may be represented. The pale tints, the lost markings and the yellowish shade through the cell, obscuring the ordinary spots, make this an easily recognizable species.

The male antennæ are shortly ciliated, no scale thickening perceptible at base in any example.

This is the species that I had erroneously identified as *contenta* Grote from a faded example, the real species being afterward redescribed by me as *pomona*.

Xylina contenta Grote.

1880, Grt., Can. Ent., xii, 216, *Lithophane.*

1893, Smith, Bull 44, U. S. Nat. Mus., 228, *Xylina.*

pomona Smith.

1899, Smith, Journ. N. Y. Ent. Soc., vii, 230, *Xylina.*

Ground color a dirty bluish gray, with a slight admixture of red. Head a little darkest between the antennæ; collar inferiorly with reddish tinge, a black line just above the centre, emphasized by a surmounting series of whitish scales. The thoracic crest is not prominent and not divided. The primaries are irregularly mottled with smoky brown and none of the marking are distinct. The t. p. line is geminate, the defining lines black, the very narrow included space a little paler gray. It is very strongly zigzagged, forming long teeth in the interspaces. The t. p. line is not sufficiently evident to be described in either of the specimens before me. The s. t. line is broken and consists of a series of sagittate black spots, which are outwardly marked by reddish or whitish scales. Just below the apex is a dusky terminal shade that emphasizes the line at that point. There is a series of blackish terminal marks on the veins and an appearance of pale terminal lunules. The ordinary spots are vaguely traceable. The orbicular is a little paler than the ground color, without defining line, but with four black dots arranged almost in a square. The reniform is large, a little dilated inferiorly, yellowish brown centered, and the lower margin marked with blackish scales. Secondaries silky, reddish gray, with a discal lunule. Beneath with reddish tinge, powdery, somewhat smoky gray, both wings with an outer line and a discal spot.

Expands 35–42 mm. = 1.40–1.68 inches.

Hab.—Alameda County, California, July, larva on apple; Central California; Olympia, Washington; Northwest British Columbia.

One male and three females, two of the latter in excellent condition, are now before me. The species is readily recognizable by the blackish dots emphasizing the ordinary spots, the lower margin of the reniform being even somewhat prominent in one specimen. The male antennæ are lengthily ciliated, the joints a little marked.

This is the species described by me as *pomona*. I had named what I supposed was a faded example of *contenta* by comparison with the type in the Edwards collection, and afterward received under the same name fresh examples of the identical species, elsewhere in this essay named *amanda*. Hence, when I received good examples of the real *contenta* I did not recognize it. There are four examples in the Edwards collection.

Xylina itata Smith.

1899, Smith, Journ. N. Y. Ent. Soc., vii, 231, *Xylina.*

Ground color a dull ashen gray, with very fine blackish powderings. All the

markings obscured. Head and thorax without ornamentation, except an obscure frontal line. The thoracic crest prominent, divided. Primaries with the markings extremely vague, in one specimen showing only a smoky median shade, which is brightest on the costa, is bent at the end of the cell and is a little emphasized by a short blackish dash in the submedian interspace. In the best marked specimen the ground color is a little brighter. T. a. line is traceable, very narrow, black, irregular, strongly bent outward, so that at the submedian interspace it forms a sharp tooth whose apex is about at the middle of the wing. Above that point it is outcurved between the veins; below that point it makes a long inward angulation and is hardly traceable below the internal vein; a few whitish scales may emphasize this blackish line. The t. p. line is brownish, very slender, barely traceable over the cell where it is crenulate, a little better marked below that point, becoming black in the submedian interspace where a short black dash connects it with the t. a. line. The median shade is broad on the costa, filling the outer part of the median space, narrowing toward the middle of the wing and less evident toward the inner margin. The s. t. line is marked by two triangular dusky shades, the first of which leaves the apex clear, and has its point at a black spot which almost touches the t. p. line between veins 4 and 5. The second of these comes to a point at a blackish spot which is just below vein 2. The ordinary spots are just traceable, the orbicular is elongate, oval, of the gray ground color, vaguely outlined in brown. The reniform is upright, rather narrow, with a blackish point inferiorly, the outline a trifle paler than the surrounding tint. The fringes have a pale interline. Secondaries a somewhat silky brownish gray, the veins a trifle more dusky, and a vaguely marked discal spot. There is a smoky terminal line at the base of the whitish fringes. Beneath smoky gray, powdery, the secondaries with a small discal spot.

Expands 35–37 mm. = 1.40–1.50 inches.

Hab.—Colorado.

Two females only are before me. The species is rather readily recognizable by its small size for this series, and by the soft powdery ashen gray, in which the maculation is almost entirely lost. A somewhat dusky cloud through the centre indicates a median shade.

Xylina fagina Morrison.

1874, Morr., Bull. Buff. Soc. Nat. Sci., ii, 115, *Lithophane.*

1887, Grt., Can. Ent., xix, 54, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 228, *Xylina.*

Head, thorax and primaries light, bluish, ashen gray. Abdomen and secondaries light smoky, with a reddish tinge, fringes almost white. Head with a whitish line between the antennæ, separating the otherwise ill-marked frontal tufts; below this point is a brown line or the entire front is darker. Collar with a narrow black line surmounting a reddish line a little above the middle and not extending to their margin. Thoracic crest prominent, obtuse but not divided at tip. No dorsal abdominal tuftings. Primaries paler, more whitish along the costa, veins narrowly black lined, some narrow black interspaceal teeth, else practically no maculation. Most specimens have a series of small, obscure, smoky s. t. spots, but these are often wanting. The ordinary spots are completely lost in most specimens and only indicated by paler shadings at best.

Expands 42–47 mm. = 1.68–1.88 inches.

Hab.—Canada; New England States; Northern New York; Northern New Jersey.

Seven males and seven females, practically alike, except for a slight difference in the shade of gray. The color is bright, clear and does not give the impression of softness.

The antennæ of the male are shortly ciliated and not thickened by scales toward the base. The species seems rather abundant.

Xylina longior Smith.

1899, Smith, Journ. N. Y. Ent. Soc., vii, 230, *Xylina.*

Ground color a bright bluish ash gray, with a more or less obvious admixture of reddish. Head with black scales between the antennæ and the front also blackish or smoky. Collar with a distinct reddish shade crowned by a short blackish line, above which the scales are white tipped at the base of the prominent crest. The thorax has some reddish scales intermingled, and there is a distinct black line at the sides of the patagiæ covering the base of the wings. The primaries are, in most cases, quite distinctly marked. There is a blackish basal streak which extends below the median vein and reaches a little beyond the inner fourth of the wing. The tendency of this streak is to become lost. The t. a. line, when present, is very narrow, black, but shaded with smoky and emphasized by a few preceding white scales. It is strongly bent outwardly, irregularly in the interspaces and forms an acute tooth at the middle of the submedian interspace, where it touches a short and prominent black dash. It is then bent inward, so that it reaches the internal vein just about as far from the base as is the inception of the line on the costa. The tendency of this line is also to disappear and to leave only a black streak extending from the internal vein about one-fourth from base to middle of the submedian interspace. This portion of the line is distinctly present in all the specimens seen by me. The t. p. line is not complete in any specimen. It is traceable in one example as a lighter shading through the darker powderings in the costal region. It is marked by black points below the cell and by blackish scales which connect it with the short black dash already described as attached to the tooth of the t. a. line. Below that point it is not traceable in any specimen. The s. t. line is indicated only by two obliqne, triangular, blackish or brown shades. The first of these starts from a blackish point between veins 4 and 5 and reaches the external margin just below the apex. The second of these shades is more brownish and starts from a point below vein 2, reaching the external margin just below vein 4. The ordinary spots, at least the reniform, are traceable in most cases. The orbicular is large, oval, oblique and is outlined by a few paler scales. The reniform is large, broad, a little constricted in the centre, extending inward inferiorly, so that it touches and may become connected below the orbicular. It is marked inferiorly by a reddish shading and is outlined by whitish scales, which, at the latter margin, are preceded and followed by a black shade that makes this part of the wing characteristic. All the veins are somewhat marked by black scales. The secondaries are smoky brown, the fringes a little paler and with a pinkish tinge. Beneath smoky gray, powdery, the disc a little darker, both wings with discal spots.

Expands 39–47 mm. = 1.56–1.88 inches.

Hab.—Glenwood Springs, Colo., March, April, May and October.

Four males and eight females; all except one from Dr. Barnes. There is quite a range of variation from almost uniformly gray examples in which the black streak through the submedian interspace is the only obvious marking, to the brightly marked type with sharp basal and subapical streaks and a reddish tinge over the reniform or through the middle of the wing. All the latter are October examples, and all of the former type have hibernated and are more or less flown

The antennæ of the male are very feebly ciliated and scarcely thicker than those of the female.

Xylina emarginata n. sp.

Ground color of head, thorax and primaries very pale, ashen gray, almost whitish. Head with a smoky brown line across the front, the tuftings not well marked. Collar with a narrow black transverse line, surmounting a narrower reddish line. Thoracic crest low, not divided. Patagiæ with a black line at base of primaries. Primaries with the veins very narrowly smoky. There is a narrow black longitudinal line at base, extending deep into a tooth of the t. a. line. Basal line obscurely marked on the costa only. T. a. line marked by geminate, smoky, oblique lines on the costa, and below that traceable in some examples by a narrow paler line, obscurely edged by darker scales, indicating lengthy teeth in the interspaces. T. p. line lost, except as a pair of smoky, oblique marks on the costa. No obvious median shade. S. t. line vaguely marked by a series of small interspaceal smoky spots, which tend to become obsolete. A slightly darker terminal line, which may be broken into dots on and between the veins and may be altogether wanting. Ordinary spots traceable, with smoky, scarcely relieved outlines. Orbicular moderate in size, oval, oblique, in some examples with an extension or suborbicular below the median vein. Reniform rather large, incompletely defined, a little constricted centrally, larger inferiorly, the middle with a small reddish tinge. Secondaries very pale yellowish gray or smoky, veins a little darker, discal spot obvious. Beneath whitish, powdery, with dusky discal spots.

Expands 40–45 mm. = 1.60–1.80 inches.

Hab.—Colorado Springs and Glenwood Springs, Colorado, April, August, October.

Two males and two females, very much alike and recognizable in this series by the practically obsolete ornamentation. The ordinary spots can be fairly well made out; but the transverse lines are so lost that only one who knows exactly what to seek can make them out. Superficially the insect resembles *fagina*; but the ordinary spots are obvious and this species has a distinct basal dash. The antennæ of the male are shortly ciliated.

Xylina holocinerea n. sp.

Head, thorax and primaries deep bluish gray. Head darker in front, with a

blackish frontal line; tufts not evident. Collar with a black subapical transverse line above a series of red scales, and in turn surmounted by white scales at the base of the thoracic crest. The latter is of moderate size and obscurely divided. Primaries with veins black marked, giving them a somewhat strigate appearance. Basal black streak evident in all the specimens before me, a paler shading extending to costa but not well marked. Basal line smoky, geminate, marked on the costa only. T. a. line smoky, geminate, very strongly toothed in the interspaces, never well marked, always incomplete, sometimes obsolete. T. p. line geminate, marked through the costal region only. S. t. line marked by a series of black, sagittate, distinct, interspaceal spots. There is a series of small black terminal lunules. Median shade blackish, oblique from costa to lower part of reniform, then much less distinct, inwardly oblique to the middle of the inner margin. Orbicular small or moderate, round or oval, rarely extending below the median vein, black ringed, sometimes pale annulate or paler filled, not contrasting. Reniform moderate, upright, a little constricted, obscurely pale ringed, narrowly edged with blackish, inferiorly darkened by the median shade. Secondaries smoky, with a yellowish tinge, fringes paler, veins and a discal lunule darker. Beneath powdery, primaries with disc smoky, else gray with a rosy tinge, secondaries with a more or less obvious exterior line, all wings with discal spots.

Expands 40–45 mm. = 1.60–1.80 inches.

Hab.—Winnipeg, Manitoba; N. W. British Columbia; Vancouver; Pullman, Washington; Sierra Nevada, California.

Six males and two females, differing from *georgii* chiefly in the darker blue ground color, less evident maculation and thicker, more lengthily ciliated male antennæ. There is very little variation save such as is due to the condition of the specimens, except in the form of the orbicular. This varies in size from small to moderate, from round to oval or oblong, and rarely it extends below the median vein, indicating a suborbicular.

Xylina georgii Grote.

1875, Grt., Can. Ent., vii, 188, *Lithophane.*

1887, Grt., Can. Ent., xix, 55, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 228, *Xylina.*

Head, thorax and primaries ashen gray, a little smoky. Front with a broad smoky band across the middle. Collar with a black line above the middle, surmounting a very feebly marked reddish shade. Patagiæ with a black line at base of primaries. Thoracic crest low and not divided. No evident abdominal tufts. Primaries with a distinct longitudinal line at base, surmounted by a clear white line. Basal line geminate, smoky, oblique across the costal region. T. a. line geminate, broken, traceable across the wing, very strongly dentate. T. p. smoky, geminate, marked in the costal region only. The median shade is broad, diffuse, smoky, not relieved, oblique from costa between ordinary spots to the inferior portion of reniform, then forming a right or slightly acute angle to within the middle of the inner margin. S. t. line a series of smoky or blackish spots, beyond which the terminal space is a little darker. Veins a little darkened

throughout. Orbicular subquadrate, oblique, not extending below the median vein in my examples, sometimes narrowly outlined by black scales, sometimes marked by the slightly paler color. Reniform of moderate size, constricted centrally, larger inferiorly and dusky filled by the median shade, not well defined, obscurely annulate with a somewhat paler shading. Secondaries very pale smoky with a faintly reddish tinge, fringes whitish, veins and a discal spot larger. Beneath gray, powdery, with discal spots, of which those on the secondaries are the larger.

Expands 39–45 mm. = 1.56–1.80 inches.

Hab.—Canada; New England States; Northern New York and Pennsylvania; Colorado.

Both sexes are at hand and similar in appearance, male antennæ thicked and obviously ciliated. The variation consists in the amount of smoky shading and the consequent distinctness of the markings. In the paler forms the median shade is quite obvious, in the darker forms it is lost.

Xylina puella n. sp.

Head, thorax and primaries very pale gray, almost whitish. Secondaries pale smoky, with a yellowish tinge, the fringes white. Abdomen with an obscure suggestion of reddish. Head with smoky frontal line. Collar with a blackish line below the tip, surmounting a slightly reddish tint. Thoracic crest low, not divided. Patagiæ with blackish line at base of wings. Primaries with the markings cleanly written. A slender black streak at base through a dusky shading, above which the space is almost white to costa. Basal line geminate, marked on the costa only. T. a. line geminate, the outer defining line black, inner smoky, as a whole nearly upright, irregular, with moderate teeth in the interspaces. S. t. line geminate, inner portion lunate, black or blackish, outer portion even, smoky, as a whole nearly parallel with outer margin after the usual outcurve over cell. S. t. line marked by a series of trigonate smoky spots and by a smoky costal shading. A series of smoky terminal lunules. Median shade smoky or blackish, diffuse, outwardly bent between the ordinary spots, slightly darkening the lower part of reniform, then close to and parallel with t. p. line to hind margin. Claviform small, black ringed, concolorous. Orbicular black ringed, oval, extending well below the median vein. Reniform black lined, upright, of good size, oblong, a little heel extending backward toward the orbicular. There is a yellowish or reddish central flush, else both spots are paler than the ground. Beneath whitish, powdery, primaries a little darker centrally, all wings with a large, blackish, discal spot.

Expands 42–44 mm. = 1.68–1.76 inches.

Hab.—California.

Two female examples without more definite locality. From all the immediately preceding forms it differs in the tolerably even median lines and in the obvious claviform, while from the *antennata* series, to which the general maculation refers it, the slender black streak will serve to distinguish it.

Xylina oregonensis Harvey.

1876, Harv., Can. Ent., viii, 55, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 228, *Xylina.*

Ground color a rather pale ashen gray, flown specimens darker, as the overlay of white scales disappears. Head with a smoky frontal line. Collar with a black subapical line above a series of reddish scales. Patagiæ with a black lateral line. Thoracic crest evident, feebly divided. Primaries with basal black streak extending well toward t. a. line, the space above it white and contrasting to the costa. T. a. line geminate, blackish, included space paler than ground, very strongly dentate in the interspaces. T. p. line geminate, obscure, with paler included space, lost below the cell. S. t. line marked by a series of black spots and a few following paler scales. A series of black terminal lunules. Orbicular large, extending well below the median cell, tending to divide off, black edged and paler filled, forming an obvious if not marked contrast. Reniform large, upright, a little constricted centrally, lower portion somewhat larger and tending to a heel toward the orbicular, black margined, annulate with pale, centre dusky, with red scales intermixed. The median shade darkens the space between the ordinary spots, but is not otherwise marked below that point. Secondaries pale, smoky gray, the fringes white, veins and a discal lunule darker. Beneath whitish, powdery, a discal spot on all wings, disc of primaries blackish.

Expands 37–45 mm. = 1.48–1.80 inches.

Hab.—Oregon; Glenwood Springs, Colorado; Volga, South Dakota.

One male and two females are at hand. The type in the Edwards collection is so remarkably close to the *georgii* of the same collection that, until I secured the examples now before me, I was tempted to consider them as identical. As it is, while well marked pale examples of *georgii* may closely resemble certain forms of *oregonensis*, the question will rarely arise in actual practice. Dr. Harvey has pointed out the form of the orbicular and the reddish scales in the reniform as distinctive, and to this may be added the pale costal region above the basal streak. The antennæ of the male are rather shortly ciliated. The size given by Dr. Harvey, 45 mm., exceeds by 3 mm. the largest example in my possession.

Xylina winnipeg n. sp.

Head, thorax and primaries dull, powdery, dark ashen gray. Secondaries and abdomen smoky. Head with a black frontal line, the tufting scarcely marked. Transverse line of collar obscure. Thoracic crest scarcely marked and not divided. Vestiture fine and flattened hair. No abdominal tuftings. Primaries powdery, all the markings traceable, but none sharply defined. Basal line geminate, marked on the costa only. A very fine black line is traceable from the base half way to the t. a. line. T. a. line blackish, geminate, outwardly oblique and irregularly toothed in the interspaces, incomplete and hardly defined. T. p. line obscurely traceable, geminate on the costa, lunulate in the interspaces, in course parallel to the outer margin below vein 6. S. t. line is a series of pale

scales, preceded by blackish irregular spots. A faint, darker terminal line. Claviform small, pointed, black edged, not prominent. Orbicular oval, oblique, moderate in size, pale powdered; suborbicular ringed with whitish, centre concolorous. Reniform moderate, upright, somewhat constricted centrally, black edged inferiorly, narrowly annulate by paler scales, a few reddish scales in centre. A median darker shade is traceable, oblique between the ordinary spots and darkening the reniform a little inferiorly. Beneath, primaries dusky except along costa and in terminal space where it is whitish, powdery. Secondaries whitish, powdery, with a dusky exterior line and a distinct discal spot.

Expands 41–43 mm. = 1.64–1.72 inches.

Hab.—Winnipeg, Manitoba.

Two males in good condition, received from A. W. Hanham. The two are much alike and resemble reduced examples of *laticinerea*, with the maculation more obscure and the basal black streak of primaries so much reduced as to be scarcely distinct. The antennæ are thickened, the joints marked and laterally fringed with tufts of fine hair. In a way the species is intermediate in appearance between *unimoda* and *laticinerea*, falling in with the former because of the lack of an obvious longitudinal black line at base.

Xylina unimoda Lintner.

1878, Lintner, Ent. Cont., iv, 96, *Xylina*.

Head, thorax and primaries an even, soft, dark ashen gray, in which all the markings are lost. Head with the usual frontal line barely indicated, the tuftings not obvious. Collar with the usual black line wanting or barely indicated. Thoracic crest small, not divided; vestiture hairy. Abdomen without dorsal tufts, soft, pale mouse gray. Secondaries smoky, with a yellowish tinge, fringes tipped with white. Primaries a little whitish at extreme base, where the basal line is indicated on the costa in some specimens. T. a. line lost in most cases; when present slender, moderately toothed in the interspaces, in one example preceded by a few white scales. T. p. line barely traceable by a very slightly paler shade. S. t. line whitish, preceded by smoky spots, sometimes united into a continuous shade. A feebly marked, broken terminal line present in some specimens. Median shade vaguely traceable in some examples. Orbicular round or oval, whitish, rarely defined, sometimes continued below the median vein into a suborbicular. Reniform upright, of moderate size, a little constricted centrally, incompletely annulate by a somewhat paler gray, else concolorous. Beneath, primaries dusky, except that the terminal space is whitish powdered. Secondaries whitish, powdery, with a blackish outer line and discal spot.

Expands 40–45 mm. = 1.60–1.80 inches.

Hab.—Canada; New England States; Northern New York.

This species is recognizable by the uniform, dull, yet soft, dark gray, the paler orbicular offering the only point of relief, and the s. t. line the only bit of obvious transverse maculation. Some specimens are almost immaculate The male antennæ have the joints marked, and at the sides tufted with fine ciliæ of moderate length.

It is not unusual to find washed-out examples of *antennata* doing duty as *unimoda*, and occasionally a well-marked *unimoda* gets into the *antennata* series. The latter species, when it has lost the basal black streak is sometimes difficult to distinguish; but it always has a certain rough, powdery appearance that marks it a stranger at once to the smooth soft tint of the present species.

Xylina laticinerea Grote.

1874, Grt., Bull. U. S. Geol. Surv., ii, 27, *Lithophane*.
1882, Riley, Papilio, ii, 102, an var. *antennata*.
1883, Hy. Edw., Papilio, iii, 135, larva.
1891, Butler, Entomologist, xxiv, 242 = *antennata*.
1893, Smith, Bull. 44, U. S. Nat. Mus., 229. *Xylina*, sp. dist.

Head, thorax and primaries powdery, dark, ashen gray. Abdomen and secondaries pale smoky, the former without dorsal tuftings, the latter with paler, white-tipped fringes. Head with the usual blackish line, tuftings not well defined. Collar with black or blackish line below tip. Thoracic crest low, but in good examples obviously divided. Primaries with all the marking present, blackish, diffuse and not contrasting. A blackish line from base to basal half line, inclosing a paler or whitish costal patch. Basal line geminate, usually complete or broken only on the subcostal vein. T. a. line geminate, oblique, a little outcurved in the interspaces, inner line more even and a little diffuse. T. p. line geminate, exserted over the cell, a little drawn in below, more or less denticulate, especially opposite the cell, outer line more even and diffuse, included space a little paler. S. t. line pale, not contrasting, broken, preceded by sagittate spots, which usually form the most prominent feature of the wing maculation. A series of blackish terminal lunules, the veins being also black marked. The median shade is not prominent, rarely even well marked, but it is usually obvious, diffuse, angulated in the lower portion of the reniform. Claviform outlined by black scales, small, pointed, often lost in the powdering, never prominent or discolored. Orbicular round or oval, oblique, distinctly paler than the remainder of the wing and therefore a little contrasting. Suborbicular well marked in most specimens, of good size, annulate with paler scales. Reniform obscure, moderate in size, upright, with an interrupted pale annulus, inferiorly better defined and tending to form a heel toward the base. Beneath, primaries dusky, except along costa and terminal space where it is gray, powdery, an obscure discal spot present in most cases. Secondaries pale, powdery, with a blackish exterior line and a large discal spot.

Expands 43–48 mm. = 1.72–1.92 inches.

Hab.—Canada; New England States; Northern New York; New Jersey; Illinois; Volga, South Dakota.

Twenty specimens, representing both sexes, are before me and form an aggregation separable with comparative ease from *grotei*, by the absence of all red scales on the primaries, by the more diffuse and more obvious maculation and by the somewhat contrasting, pale orbicular. There is not much real variation save that due

to fading or flight. There is some difference in the amount of black powdering which affects the relative distinctness of the parts, but nothing else of account. The antennæ of the male have the joints well marked and laterally furnished with tufts of moderately long, soft hair.

Xylina grotei Riley.

1882, Riley, Papilio, ii, 102, an var. *antennata*.
1887, Grt., Can. Ent., xix, 54, *Lithophane*.
1893, Smith, Bull. 44, U. S. Nat. Mus., 229, *Xylina*.
cinerosa || Grt.
1879, Grt., Bull. U. S. Geol. Surv., v, 202, *Lithophane*.
1882, Riley, Papilio, ii, 102, *nomen bis lectum*.

Head, thorax and primaries dull, dark ashen gray. Head with an admixture of white, and with a blackish frontal line. Thorax with the transverse line very obscure or altogether wanting. Thoracic crest low, in very rare instances feebly divided. Vestiture flattened hair mostly. Abdomen a pale mouse gray, without obvious dorsal tufts. Primaries with a slender black line at base, extending to the geminate basal half line, the included costal region paler, but rarely contrasting. T. a. line geminate, included space a little paler, defining lines somewhat diffuse, not much darker than the ground color, as a whole a little outwardly oblique, rather regularly outcurved in the interspaces. T. p. line geminate, included space paler, inner portion crenulate, outer even, very little darker than the ground, its course as a whole evenly outcurved over the cell, well drawn in below and with a little outward tooth on the internal vein. S. t. line obscure, pale, broken, preceded by continuous, irregular blackish spots, sometimes marked by a few reddish scales. A series of slightly darker terminal lunules which may be entirely obsolete. Median shade usually traceable, sometimes fairly evident, often absent, oblique between the ordinary spots to the lower portion of reniform, there forming almost a rectangle toward the inner margin. Claviform small, outline diffuse, often obsolete, rarely dark filled. Orbicular oval, oblique, paler. Suborbicular transversely oval, pale ringed, usually separated from the orbicular. Reniform moderate in size, a little constricted, lower portion somewhat larger than upper and somewhat darker; centre with a brownish shading. Secondaries smoky, with a faint reddish tinge, the fringes paler. Beneath gray, with a reddish tinge, powdery, disc of primaries blackish, secondaries with an exterior line, all with a blackish discal spot.

Expands 40–46 mm. = 1.60–1.84 inches.

Hab.—Canada, south to the District of Columbia, west to Nebraska, Dakota and Manitoba.

This is at once the most common and widely distributed species of this group. In fresh examples all the ordinary maculation is traceable, and there is no difficulty at all in separating the species from its allies. Spring specimens, especially when flown, lose their characteristic appearance and may become difficult to distinguish from *unimoda*. From *antennata* this species differs obviously by its

larger size, different wing form and much darker, dull ground, lacking the brightness and clear definition of the ordinary spots. Indeed, with a series of these two forms, side by side, their difference is obvious.

This is the species that I have been calling *antennata* of late years, and have, erroneously, determined as such for my correspondents. In consequence, all that Mr. Slingerland says of *antennata* in Bulletin 123, of the Cornell Station, really applies to this form. Further references to this matter will be found under *antennata*.

From *laticinerea* this species differs in being much less powdery, and having the median shade much less evident. The specimens average smaller on the whole and the wings are more parallel. Yet, with flown examples, there is sometimes a chance for doubt.

The antennæ of the male in this and the two following species are practically alike under the hand lens. The joints are a little marked, and they are laterally tufted with bunches of soft hair.

Xylina antennata Walker.

1858, Wlk., Cat. Brit. Mus., Het., xv, 1738, *Xylina*.
1883, Saunder's Fruit Insects, 138, f. 138, *Lithophane*.
1893, Smith, Bull. 44, U. S. Nat. Mus., 228, *Xylina*.
cinerea Riley.
1871, Riley, 3rd Rept. Ins. Mo., 135, f. 57, *Xylina*.
1874, Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane*.
1879, Grt., Bull. Geol. Surv., v, 201, pr. syn.
1881, Riley, Index to Mo. Repts., 74, *Lithophane*.
1882, Riley, Papilio, ii, 43, 101, an sp. dist. ?
1882, Fernald, Papilio, ii, 63, pr. syn.
1891, Butler, Entomologist, xxiv, 242, pr. syn.

Head, thorax and primaries rather bright ashen gray, with a purplish tinge. Head whitish, with a dusky frontal line, antennæ white at the base. Collar with a blackish line near tip, surmounting a reddish shade, which may extend throughout the lower portion, may merge into a whitish gray, or may form a scarcely traceable line. Patagiæ with black submarginal lines, sometimes white shouldered at the base of the primaries. Anterior crest low, not divided in any specimen before me; vestiture mostly flattened hair. Abdomen very light smoky gray, without obvious dorsal tufts. Primaries with black basal streak extending to basal half line, margined above with reddish scales, and including toward costa a paler, sometimes whitish patch, which is usually a prominent feature in the wing. Basal line geminate, not well marked. T. a. line almost upright, irregularly dentate in the interspaces, best marked by the pale included shade, the defining lines being scarcely darker than the ground color. T. p. line geminate, outcurved over the cell, almost equally incurved below it, included space a little paler, defining lines hardly visible in most cases except as venular dots. The line is therefore poorly marked and often hardly traceable. S. t. line marked by a series of cuneiform, contiguous black spots, outwardly edged with

brown or gray scales. There is a series of small black terminal spots. Median shade traceable in most specimens and obvious in some; oblique from the costa, darkening the space between the ordinary spots and the inferior portion of the reniform, then evenly oblique inwardly to the inner margin. Claviform small, pointed, black ringed, distinct in most specimens; black filled and prominent in some. Orbicular round or oval, oblique, usually with an extension or suborbicular below the vein, narrowly edged with black scales, annulate with pale gray, usually light filled. Reniform moderate, upright, a little constricted centrally, inwardly extending toward the orbicular on the median vein; centre with a reddish filling, defining line usually distinct, black. Secondaries pale, dirty yellowish or smoky, fringes lighter. Beneath, primaries smoky, except along costa and in terminal space, discal spot blackish. Secondaries with an exterior line and a smoky lunule.

Expands 35–42 mm. = 1.40–1.68 inches.

Hab.—Canada; New England States; New York; Burlington Co., New Jersey; Central Illinois; Minnesota; Central Missouri.

Sixteen examples, representing both sexes, are before me and show very little variation. The amount of white in the basal space differs, as does the intensity of the median shade and the prominence of the reniform. In other respects they agree.

The species here described is quite generally labeled *grotei* in collections largely on my authority, and Mr. Slingerland's remarks on *grotei* in Bulletin 123, of the Cornell Experiment species really apply to this species.

Walker in his original description gave no locality for his species, and it was not recognized as American until Dr. Fernald saw the type in the British Museum. Mr. Grote's original reference of *cinerea* to *antennata* was made on the basis of this comparison. As a matter of fact Riley's description covers *cinerosa* and *laticinerea* as well as *antennata*, but his figure and the specimens actually labeled by him are clearly this form.

I saw Walker's type and properly labeled the specimens in the National Museum collection, but in some way failed to straighten out my own set, so that, for ten years last past, I have uniformly named the species here described as *grotei*. The real *grotei* = *cinerosa* Grt. is what I have called *antennata*. This matter should be especially noted in the application of Mr. Slingerland's descriptions of the early stages, the mixture of species being chargeable to me. The *laticinerea* has been correctly named throughout.

Xylina torrida Smith.

1899. Smith, Journ. N. Y. Ent. Soc., vii, 228, *Xylina*.

Ground color bluish gray. Antennæ white basally, else brown. Head with a

black line across the middle of the front, the vertex usually a little smoky. Collar as a rule paler than ground color, sometimes whitish, usually with a reddish flush toward a subapical black line, which in some examples is almost obsolete. Thorax more or less white powdered, not definitely marked, patagiæ black edged at the base of the wings. Abdomen with a reddish flush in well preserved specimens. Primaries more or less powdered, with smoky or blackish scales, varying in tint and often clouding the median space. Basal line geminate, blackish, marked through the costal cell only. A black longitudinal line extends from the base through the submedian interspace half way to the t. a. line, and is then obliquely extended by a black or blackish shade to the costa within the origin of the t. a. line. The space included in this boundary at the base of the wing is whitish or much paler than the rest of the wing, further emphasized by a rusty shading just above the black streak. T. a. line geminate, black, the outer portion most sharply defined, outcurved in the interspaces and quite sharply toothed inwardly on the veins, as a whole a little outwardly oblique. T. p. line lunulate, geminate, outer line smoky, indefinite and quite even, lines black, often disconnected and tending to obsolescence; as a whole the line is outwardly exserted over the reniform and almost upright below that point. S. t. line marked by a series of triangular black, preceding spots, except at the costa where a smoky shade precedes it. This series of spots is in a way the most prominent and certainly the most constant feature of the wing. A series of termiual spots which are not at the extreme edge of the wing and which are elongate though not connected into a line. A more or less diffuse median shade, almost or quite filling the space between the ordinary spots, parallel with and close to t. p. line below the reniform. Claviform black ringed and sometimes almost black filled, small, pointed, not reaching the middle of the median space. Orbicular upright, oval, of good size, as pale as any other part of the wing, black ringed except superiorly; below the median vein there is attached to it a smaller, less prominent, suborbicular, which is usually smoky centered and may become entirely obscured. Reniform large, oval, only a little kidney shaped, black riuged, centered with smoky in which is a reddish shading. The veins are more or less smoky. Secondaries smoky, with a reddish tinge, sometimes quite pale. Beneath with a reddish flush, powdery, both wings with an outer smoky line and round discal spot.

Expands 40–46 mm. = 1.60–1.80 inches.

Hab.—Pullman, Washington, October, March and April (C. V. Piper); Garfield County, Colorado, 4000 feet (Bruce); Glenwood Springs, Colorado, October, March, April (Barnes); N. W. British Columbia (Ottolengui); Soda Springs, California, October 16th (Hy. Edwards).

Twenty specimens, representing both sexes, are at present before me and I have seen others. They vary in the amount of contrast and the relative brightness of the maculation. In some everything is clear cut, every line and shade recognizable at a glance, in others, all, save the ordinary spots and the s. t. line, is obscured, and between these extremes the others range. In wing form the species is

most nearly like *laticinerea;* but in brightness of maculation it equals *tepida.*

The antennæ of the male are practically like those of *antennata.* The thoracic vestiture is mostly flattened hairs, the anterior crest low, but in perfect specimens a little divided. Abdomen without obvious dorsal tufts in any of the examples before me.

Xylina tepida Grote.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 27, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 229, *Xylina.*

Head, thorax and primaries bright, pale bluish gray. Head with a whitish admixture in most cases, and with a smoky frontal line. Collar usually paler below, a black line just below the tip, surmounting a vague reddish shading. Thoracic vestiture flattened hair and scales, anterior crest very obscure, not divided in any example before me. Abdomen mouse-gray, with a reddish tinge, without obvious dorsal tuftings. Primaries with the markings brightly defined. A distinct black basal mark, curved to meet the geminate basal line, superiorly margined by reddish scales, above which is a white line from which a whitish shade tends to fill the included space to costa. T. a. line geminate, blackish, inner portion a little diffuse, nearly upright, a little outcurved in the interspaces, sometimes considerably below the internal vein. T. p. line geminate, broken, lunulate or crenulate, incomplete and obscurely marked, outcurved over the cell, abruptly drawn in so as to almost touch the inferior part of the reniform, then straight or nearly so to the inner margin. S. t. line pale, broken, a little irregular, preceded by contiguous blackish spots. A series of distinct, lunate, black terminal spots. Median shade blackish, broad, a little diffuse, obvious in all and prominent in most specimens, a little outwardly oblique, direct from costa close to reniform and the t. p. line below it to the inner margin. Claviform broad, concolorous, outlined in blackish, varying in length, but never extending to the centre of the median space. Orbicular complete, narrow, irregularly lunate, with the convexity inward, narrowly defined by black scales, broadly annulate in white, the centre narrowly gray. Reniform large, almost as broad as long, almost rectangular, with the corners rounded, narrowly defined by black and black scales, inwardly obscured by the median shade, centrally flushed with reddish. Secondaries smoky, with a carmine flush, the fringes a little paler. Beneath reddish gray, powdery, primaries with disc smoky, secondaries with an exterior dusky line, all wings with a dark discal spot.

Expands 36–42 mm. = 1.44–1.68 inches.

Hab.—Canada; New England States; New York; Northern Pennsylvania.

Eight examples, six of them males, are at present before me. These is a little difference in the relative brightness of the maculation, but nothing else of note. The form of the orbicular here is constant and characteristic, the broad white annulus forming one of the most obviously contrasting marks. The antennæ in the male are not much thicker or more lengthily ciliated than in the female.

Xylina baileyi Grote.

1877, Grt., Can. Ent., ix, 86, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 229, *Xylina.*

Head, thorax and primaries a very pale, greenish gray. Head with the frontal superposed tufts distinct, and with a frontal blackish line. Collar with a brown or black line below tip, variably evident and sometimes obsolete. Patagiæ tipped and laterally margined with deep umber brown. Thoracic vestiture flattened hair and scales; anterior crest hardly elevated and not divided. Abdomen mouse-gray, with a carmine tinge and without dorsal tufts. Primaries with the maculation clearly written, and in part contrasting. A black basal streak curved toward the costa at the end of the geminate, broken basal line, inferiorly and outwardly diffuse, darkening this region so that the costal base seems paler by contrast. T. a. line geminate, broken, brown, not well defined, in course a little outwardly oblique and outcurved in the interspaces. T. p. line geminate on the costa, thence outer portion lost, inner lunulate or crenulate, brown, broken and partly lost, outcurved over cell, abruptly drawn in to the inferior margin of reniform, then even to the inner margin. S. t. line concolorous, a little irregular, preceded by a series of contiguous brown or black spots, which may become separated and partly lost, those in the submedian interspace and opposite the cell remaining constant. A series of brown or blackish interspaceal, terminal lunules. Median shade obvious in all specimens and prominent in most, brown or blackish, broad, diffuse, oblique from costa between the ordinary spots, darkening the lower part of reniform, then a little bent and parallel with t. p. line. Claviform broad, varying in length, concolorous, incompletely defined by black scales. Orbicular oblong, oblique, of good size, open to the costa, else black edged, concolorous or a little paler. Reniform large, almost as broad as long, ringed with black, centered with reddish. Secondaries smoky, with a carmine tinge, fringes paler tipped. Beneath gray, with a reddish tint, powdery; primaries with disc black, secondaries with a broken exterior line, all wings with a somewhat obscure discal spot.

Expands 35–40 mm. = 1.40–1.60 inches.

Hab.—New Hampshire; Northern New York; Northern Pennsylvania; probably all of the New England States and Canada.

Four males and seven females are under observation. The variation is largely in the relative prominence of the median shade, which is usually the most conspicuous feature of the ornamentation. The blackish spots preceding the s. t. line also range from a continuous shading to broken patches. Occasional specimens become powdery, obscuring the greenish tinge of the ground. The male antennæ are not much thicker nor much more lengthily ciliated than the female.

Xylina querquera Grote.

1874, Grt., 6th Rept. Peab. Ac. Sci., 34, *Lithophane.*

1874, Grt., Bull. Buff. Soc. Nat. Sci., II, pl. i, f. 5, *Lithophane.*

1882, Grt., Ill. Essay, 57, pl. 2, f. 21, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 229, *Xylina.*

Head, thorax and primaries a rich creamy gray, with a faintly green or bluish

tinge—usually the former. Head with superimposed tufts distinct, and with a brown frontal line, below which it is reddish. Collar unlined, thoracic crest hardly marked, vestiture flattened hair and scales, patagiæ tipped and laterally margined with chocolate brown. Primaries with curved black streak at base, diffuse inferiorly, strongly contrasting. All the lines geminate, little darker than the ground, tending to become lost, always marked on the costa. T. a. line nearly upright, a little outcurved in the interspaces. T. p. line with inner portion slender, even, not lunulate or crenulate, a little dentate or angulate on some of the veins, occasionally lost, outer portion diffuse, usually lost below the outcurve over cell. S. t. line marked only by a pair of black contrasting spots in the submedian interspace and opposite the cell. A series of distinct, black, terminal lunules in the interspaces. The median shade extends as a contrasting brown or black shade from the costa between the ordinary spots, is then lost or traceable as a slightly darker shade only, until it gets below the internal vein, where it forms a black or brown patch on the inner margin. Claviform barely indicated in one example. Orbicular large, concolorous, open to the costa, sides more or less obviously marked by black scales. Reniform large, almost as broad as long, incompletely black ringed, more or less brown and black filled. Secondaries smoky, with a purplish tinge. Beneath powdery, with a carmine shading, a more or less obvious outer dark line, and on all wings a blackish discal spot.

Expands 38–42 mm. = 1.56–1.68 inches.

Hab.—New Hampshire; Massachusetts; New York; Missouri.

One pair only is at present before me, but I have recently compared several others which do not greatly differ. The species is distinct in many ways and can always be recognized by the contrasting, square, dark brown or black patch between the ordinary spots and partly including the reniform. Other ornamental features have been elsewhere noted. The thorax seems to be unusually short, almost square, depressed and with collar and patagiæ much less marked than usual. The male antennæ are very shortly ciliated, the joints scarcely more marked than in the female.

Xylina viridipallens Grote.

1877, Grt., Can. Ent., ix, 215. *Lithophane.*

1878, Grt., Bull. Geol. Surv., iv, 180, *Lithophane.*

1882, Grt., Ill. Essay, 57, pl. ii, f. 22, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 229, *Xylina.*

Head, thorax and primaries a dull, pale, greenish gray. Head white below the usual tuftings. Collar with an obscure blackish line below tip. Thoracic vestiture scales and flattened hair, the crest indicated by a little tuft of discolored scales. Primaries with all the markings blackish, fairly evident, but not in the least contrasting. Basal streak traceable. Basal line geminate, marked on the costa only. T. a. line geminate, inner portion lost or very feebly marked, outwardly oblique, a little outcurved in the interspaces. T. p. line geminate, broken, outcurved over the cell and then almost upright to inner margin. S. t. line marked by a series of partly contiguous blackish spots, indicating an irregularly bisinuate course. A series of interspaceal terminal lunules. Median shade diffuse, almost evenly oblique from costa to inner margin between the ordinary

spots and darkening the inner portion of the reniform. No claviform. Orbicular large, a little paler than the ground, somewhat lunate, the convexity toward base, concavity distinctly black edged, else margin not well defined. Reniform large, almost as broad as long, basal half darker, outer half a little paler than ground; inner margin black edged, else not well defined. Secondaries and abdomen smoky, with a reddish tint, the former with pale tipped fringes, the latter without dorsal tufts. Beneath reddish gray, powdery; primaries with disc smoky; secondaries with an outer line; all wings with discal spots better marked on the secondaries.

Expands 37 mm. = 1.48 inches.

Hab.—Massachusetts; Long Island, New York.

Only one female is before me and I have seen only one or two others aside from the type. The species is distinctly rare and absolutely unmistakable. It intensifies the thoracic characters noted in *querquera* and has practically no crest at all.

Xylina pexata Grote.

1874, Grt., 6th Rept. Peab. Ac. Sci., 35, *Lithophane.*
1878, Graef, Bull. Bkln. Ent. Soc., i, 10, = *ingrica.*
1883, Grt., Proc. Am. Phil. Soc., xxi, 160, ? = *ingrica.*
1893, Smith, Bull. 44, U. S. Nat. Mus., 230, *Xylina.*
washingtoniana Grote.
1883, Grt., Papilio, iii, 74, *Lithophane*, var. præc.
1893, Smith, Bull. 44, U. S. Nat. Mus., 230, *Xylina.*

Head and thorax dark, blackish brown, head more reddish inferiorly, tuftings fairly marked. Thoracic vestiture scales and flattened hair, anterior crest prominent, divided, posterior tuft obvious and truncate. In well preserved specimens the patagiæ have an admixture of white tipped scales and are white margined at the insertion of the primaries. The fore wings have an ashen gray base, over which is a red-brown shade and a dense powdering of black. In rubbed examples the gray is evident and the shadings are localized. A short, slender, curved, black basal mark, diffuse inferiorly, margined by contrasting yellow or white above. Basal line geminate, black, marked on the costa only. T. a. line black, outwardly oblique, a little outcurved in the interspaces, almost lost in the darker examples. T. p. line geminate, blackish, broken, incomplete, lunate, not well defined, except in the submedian interspace where it is followed by white or yellow scales; a few such scales also occur in some examples below the internal vein. S. t. line pale, distinct, irregular, preceded by a reddish, brown or black shading, which is sometimes broken up into spots. A gray shade extends through the s. t. space from the apex close to the defining shade of the s. t. line. There is a series of black, interspaceal, terminal lunules. A median shade is traceable in some specimens between the ordinary spots, but in most examples this is lost in the dark powdering. Claviform short, broad, concolorous, or with a gray shade, and from its tip a black line extends to the t. p. line. Orbicular oblong, oblique, black margined, annulate with white or yellow, brown centered. Reniform very broadly kidney shaped, in some specimens almost a rectangle, reddish filled, annulate by a narrow ring of white or gray, marked by black scales. Secondaries yellowish smoky, fringes paler, with a reddish tint. Abdomen smoky gray, with a prominent black dorsal tuft on segment 3, and smaller tufts on the two

segments following. Beneath smoky, powdery, with a carmine flush; secondaries paler, with an exterior line; all wings with a discal spot.

Expands 38–45 mm. = 1.25–1.80 inches.

Hab.—Canada; New England States; Northern New York; Manitoba; Washington; probably throughout the Northern United States from the Atlantic to the Pacific

A long series of both sexes, varying a little in brightness of color, but not markedly in any other way. The type of Mr. Grote's variety *washingtoniana*—in the Neumogen collection—is nothing more than a somewhat dark, intensely colored example, of which I have an almost exact duplicate from Connecticut.

The species is altogether different from any of those preceding and should be easily recognized. In the male the antennæ have the joints marked and the lateral tuftings well developed.

Xylina dilatocula n. sp.

Head black above, lightening through brown to red at the base of the palpi. Collar brown to a black transverse line just below the brown tip. Thoracic disc deep, blackish brown, the patagiæ with gray tipped scales intermixed. Anterior crest evident, divided, posterior tufting truncate. Abdomen reddish gray, with dorsal tufts, of which that on the 3rd segment is the most obvious. Primaries black and brown shaded over a blue-gray ground. A black curved basal streak, above which is a brown shading which becomes gray on the costa. Basal line geminate, black. T. a. line geminate, blackish, inner portion obscure, included space gray; in course outwardly oblique, even, a little outcurved. T. p. line geminate, inner part lunulate, black; outer even, smoky, lost over the outcurve; included space gray, in course it curves over the cell and is then deeply drawn in to the middle of the reniform. S. t. line pale, sinuate, irregular, preceded by a brown shade which becomes reddish, then gray before merging into a dark shading that follows the t. p. line. Apex gray, the narrow terminal space gray and black shaded to the lunulate, narrow, terminal line. Median shade black, diffuse, oblique, darkening the space between the ordinary spots and the outer portion of the median space. Claviform large, gray, not contrasting, incompletely outlined, a black line from its tip to the t. p. line. Orbicular round or nearly so, large, gray, contrasting. Reniform very large, almost square, with rounded corners, reddish brown, with a central yellowish tinge. Secondaries pale, powdery, dirty yellowish, with a slight reddish tint, veins, a discal lunule and a terminal line smoky. Beneath reddish gray, powdery, with more or less obvious outer line and discal spots best marked on the secondaries.

Expands 45–48 mm. = 1.80–1.92 inches.

Hab.—Seattle, Washington; Sierra Nevada, California.

Two males and one female before me and I have seen others. The species resembles *pexata*, and I had, from the description, identified this as Mr. Grote's *washingtoniana*; but the type is really *pexata*. The present species differs obviously in the very large, discolored, ordinary spots and in the brown collar. The antennæ of the male are laterally tufted with moderately long ciliæ.

Xylina lepida Lintner.

1878, Lint., Ent. Cont., iv, 95, *Xylina.*

1878, Grt., Bull. Geol. Surv., iv, 181, *Lithophane.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 230, *Xylina.*

Head, thorax and primaries deep blue-gray. Head darker, with a gray line between the antennæ. Collar smoky brown, with white tip at the base of the distinct, divided thoracic crest. Patagiæ with a lateral white line at base of primaries. Vestiture mostly flattened hair. Abdomen reddish gray, untufted. Primaries somewhat mottled with smoky brown shades, irregularly distributed. Basal line geminate, black, broken, outcurved, connected with a short blackish streak. T. a. line geminate, outer portion blackish, inner smoky and not relieved. The line is unusually distant from base, outwardly oblique to the submedian interspace, is then inwardly bent and forms an inward tooth on the internal vein. T. p. line denticulate, very irregular, closely approaching the t. a. line in the submedian interspace and there connected with it by a black bar. S. t. line concolorous, a little irregular, marked by irregular smoky preceding spots of varying sizes. Fringes cut with smoky. A smoky, diffuse median shade through the centre of the wing. No claviform. Orbicular large, oblique, gray, open to the costa, with a smoky outline. Reniform of moderate size, gray, centrally constricted, with a smoky outline. Secondaries pale, transparent carneous gray, the fringes white tipped. Beneath reddish gray, powdery, with an obscure outer line and a smoky discal spot on all wings.

Expands 40 mm. = 1.60 inches.

Hab.—Canada; New England States; Northern New York.

Only the female is before me at present and I have not had many examples of this species under examination. It is so unlike any other, however, that there can be no question as to its identity. I have not noted any variation save in the amount of the smoky shading.

Xylina thaxteri Grote.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 196, *Lithophane.*

1875, Grt., List Noctuidæ, pl., f. 3, *Lithophane.*

1876, Speyer, Stett. Ent. Zeit., 203, an var. *lambda.*

1878, Lint., Ent. Cont., iv, 127, an var. *lambda.*

1882, Grt., Proc. Am. Phil. Soc., xxi, 160, ? an var. *conformis.*

1891, Butler, Entomologist, xxiv, 263, = *lambda.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 230, an sp. dist. ?

Head, thorax and primaries bright blue-gray. Head with a brown frontal line, below which it is reddish. Collar with a narrow but clear black transverse line, margined above with white scales. Thoracic crest distinct, divided, not very high. Patagiæ with a deep brown line at the sides. Primaries with a black streak at base, curved up toward the costa at the basal half line, which is there marked by geminate spots. Superiorly the streak is margined by a white line. Below and beyond it is diffuse and becomes brown shaded. T. a. line geminate on the costa, then the inner portion is lost and the outer is black, even, oblique to the submedian interspace, thence inward to form an acute tooth on the internal vein. T. p. line geminate, smoky, outer portion becoming lost over the cell, included space clear gray, inner line lunulate, more or less incomplete, as a whole

the line is not well marked and often lost in part. A prominent black bar connects the lines in the submedian interspaces and this is diffuse superiorly, with a brown tinge. S. t. line defined by a series of black marks which form a prominent inward tooth between 4 and 5, and another on vein 3, this latter almost reaching the t. p. line. Beyond this the terminal space is often reddish or brown shaded, but it sometimes remains of the normal ground color. There is a series of very small terminal brown marks which are often wanting. The median shade is brown or black, outwardly oblique from costa to the black streak connecting the median lines, then always brown from the middle of this line to the inner margin. Inwardly this shade is sharply defined to form the outer margin of the orbicular, outwardly it is diffuse, obscures the reniform and darkens the median space to the t. p. line. Orbicular large, oval, oblique, open to the costa, inferiorly broadly outlined in black. Reniform large, upright, centrally constricted, shaded with reddish, indefined except inferiorly, where it is prominently black margined. Secondaries smoky, with either a purplish, red or yellow shading. Beneath smoky, with carmine powderings, a more or less complete outer line and a smoky discal lunule.

Expands 39–43 mm. = 1.56–1.72 inches.

Hab.—Canada; New England States; New York; Northern New Jersey; Pennsylvania; probably also along the northern boundary, at least as far west as Illinois.

Twelve examples, representing both sexes, are before me. This is the most striking species in our fauna, hence easy of recognition. The variation is almost entirely in the amount of the brown shading and its richness; this in turn being dependent upon the freshness of the specimen. The male antennæ are shortly ciliated.

Typical *lambda* has not been before me for comparison, but both varieties have been compared and the characters studied. Unless the specimens seen by me are not *lambda*, that species is distinct from *thaxteri*. Until a much closer study has been made of the typical form I do not feel warranted in referring our American form as identical with the European species.

LIST OF THE SPECIES.

XYLINA Ochs.

1. X. semiusta *Grt.*
2. X. hemina *Grt.*
3. X. disposita *Grt.*
4. X. bethunei *G. and R.*
5. X. patefacta *Wlk.*
6. X. innominata *Smith.*
   signosa Grt.
7. X. oriunda *Grt.*
8. X. gausapata *Grt.*
9. X. ferrealis *Grt.*
10. X. signosa *Wlk.*
    petulca Grt.
11. X. amanda *Smith.*
12. X. contenta *Grt.*
    pomona Smith.
13. X. itata *Smith.*
14. X. fagina *Morr.*
15. X. longior *Smith.*
16. X. emarginata *Smith.*
17. X. holocinerea *Smith.*

18. X. georgii *Grt.*
19. X. puella *Smith*
20. X. oregonensis *Harv.*
21. X. winnipeg *Smith.*
22. X. unimoda *Lint.*
23. X. laticinerea *Grt.*
24. X. grotei *Riley.*
    cinerosa || Grt.
25. X. antennata *Wlk.*
    cinerea Riley.
26. X. torrida *Smith.*
27. X. tepida *Grt.*
28. X. baileyi *Grt.*
29. X. querquera *Grt.*
30. X. viridipallens *Grt.*
31. X. pexata *Grt.*
    washingtoniana Grt.
32. X. dilatocula *Smith.*
33. X. lepida *Lint.*
34. X. thaxteri *Grt.*

EXPLANATION OF PLATE I.

1. Harpe and clasper of male *Xylina seminsta.*
2. " " " " " *hemina.*
3. " " " " " *disposita.*
4. " " " " " *bethunei.*
5. " " " " " *patefacta.*
6. " " " " " *innominata.*
6a. " " " " " *innominata*—different view.
7. " " " " " *orinnda.*
8. " " " " " *ferrealis.*
9. " " " " " *signósa.*
10. " " " " " *amanda.*
11. " " " " " *contenta.*
12. " " " " " *fagina.*
13. " " " " " *longior.*
14. " " " " " *emarginata.*
15. " " " " " *holocinerea.*

EXPLANATION OF PLATE II.

16. Harpe and clasper of male *Xylina georgii.*
17. " " " " " *winnipeg.*
18. " " " " " *unimoda.*

The last two structures are nearer in actual size; f. 17 was drawn with a two-inch objective; f. 18 with a three. As a matter of fact *unimoda* is larger than *winnipeg.*

19. Harpe and clasper of male *Xylina laticinerea.*
20. " " " " " *grotei.*
21. " " " " " same—another view.
22. " " " " " *antennata.*
23. " " " " " *torrida.*
24. " " " " " same—another view less magnified.
25. " " " " " *tepida.*
26. " " " " " *baileyi.*
27. " " " " " *querquera.*
28. " " " " " *pexata.*
29. " " " " " *ingrica.*

30. " " " " " *dilatocula.*
31. " " " " " *lepida.*
32. " " " " " *thaxteri.*

EXPLANATION OF PLATE III.

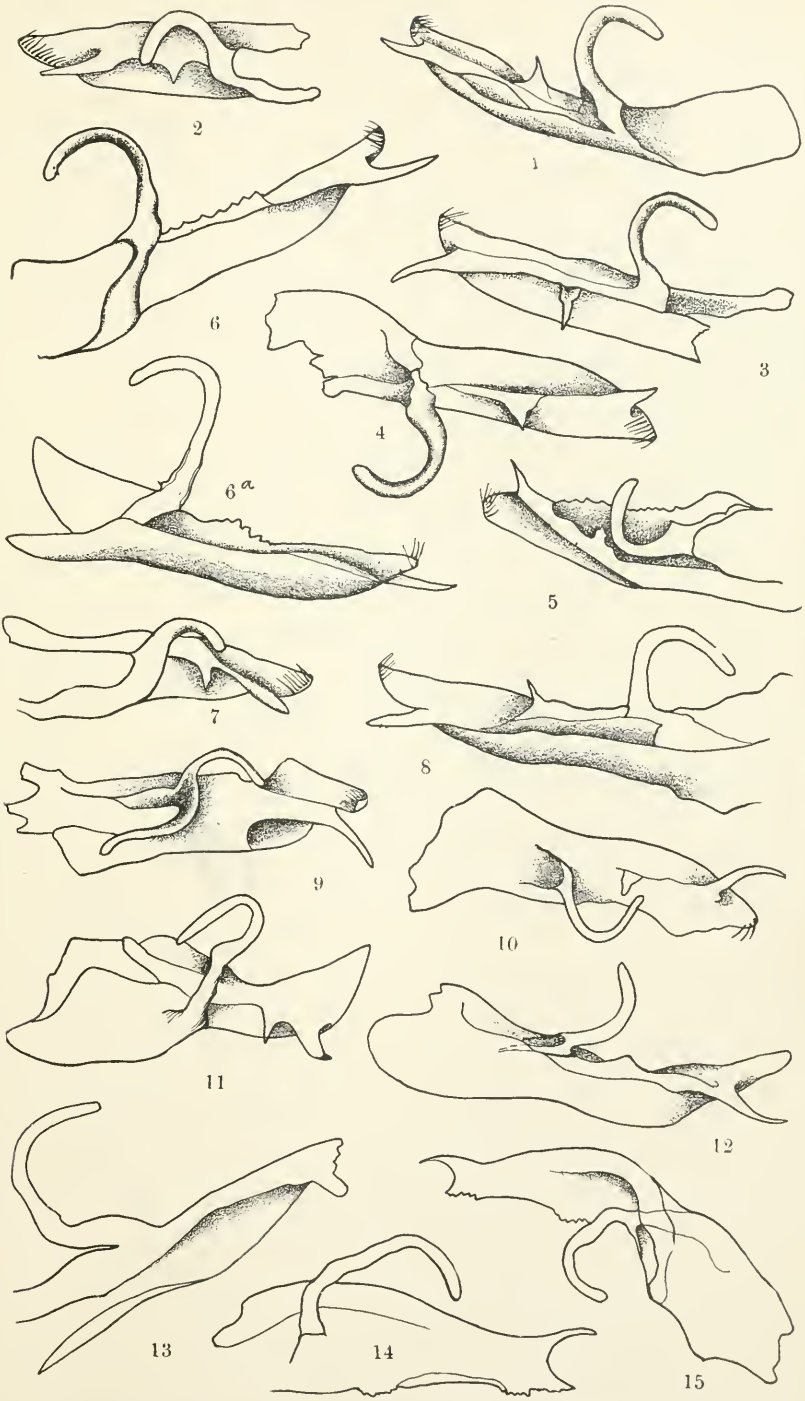
1. *Xylina semiusta* Grt.
2. " *hemina* Grt.—melanic form.
3. " *disposita* Grt.—normal.
4. " *disposita*—a little suffused.
5. " *bethunei* G. and R.
6. " *bethunei* G. and R.
7. " *patefacta* Wlk.
8. " *innominata* Smith—dark form.
9. " *innominata*—light form.
10. " *orinnda* Grt.
11. " *ferrealis* Grt.—dark form.
12. " *ferrealis*—light form.
13. " *signosa* Wlk.
14. " *itata* Smith—type.
15. " *itata*—suffused.
16. " *amanda* Smith.

EXPLANATION OF PLATE IV.

17. *Xylina contenta* Grt.—normal.
18. " *contenta*—small, dark form.
19. " *fagina* Morr.
20. " *longior* Smith—normal.
21. " *longior*—much suffused.
22. " *emarginata* Smith.
23. " *holocinerea* Smith.
24. " *georgii* Grt.
25. " *puella* Smith.
26. " *oregonensis* Harv.
27. " *winnipeg* Smith.
28. " *unimoda* Lint.

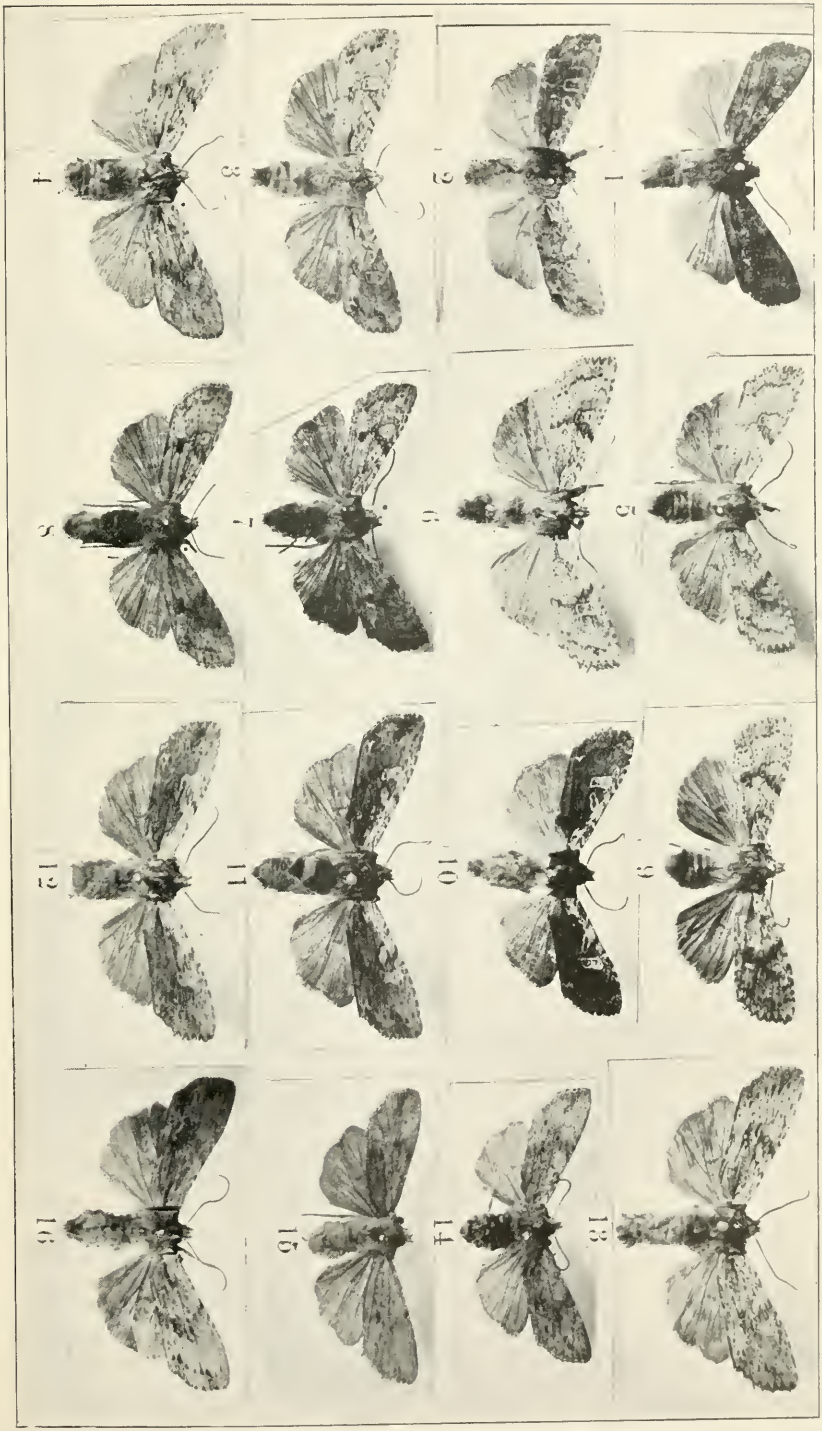
EXPLANATION OF PLATE V.

29. *Xylina laticinerea* Grt.
30. " *grotei* Riley.
31. " *torrida* Smith.
32. " *anteunata* Wlk.
33. " *tepida* Grt.
34. " *baileyi* Grt.
35. " *querquera* Grt.
36. " *viridipallens* Grt.
37. " *pexata* Grt.
38. " *dilatocula* Smith.
39. " *lepida.*
40. " *thaxteri.*



XYLINA.

XYLINA.



XYLINA.

17

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XYLINA.

XYLINA.

CONTRIBUTIONS TOWARD A MONOGRAPH OF THE NOCTUIDÆ OF BOREAL NORTH AMERICA.

REVISION OF THE SPECIES OF ACONTIA Ochs.

BY JOHN B. SMITH, SC.D.

Acontia, proposed by Ochsenheimer in "Die Schmetterlinge von Europe," IV, 91, 1816, is characterized essentially as follows: Medium sized species, with broad thoracic disc densely clothed with flattened scales, scutellum very large, inflated and extended over the first abdominal segment. Abdomen short, slender. Wings short and broad, greatly widened outwardly, primaries obtuse at the tip; secondaries rounded, with stout veins, 5 somewhat weaker. Head, breast, legs, abdomen and palpi closely scaled, the latter curved over the front, terminal joint obtuse. Eyes comparative large, globose and naked. Tongue spiral, moderate or strong. Antennæ simple in both sexes.

Our own species fit this description in a very general way only, the large number of species in our fauna showing variations in structure not paralleled in the poorer European fauna.

The eyes are naked, moderate in size; head moderate, closely applied to thorax but not retracted; its front flat, convex, inflated, protuberant, conically produced, with a small rounded truncate tip, drawn out into a flat process with a chisel-like tip, rough or smooth. As a rule the front is convex or moderately protuberant, in the latter case generally a little roughened. Palpi oblique, usually not exceeding the middle of the front. Antennæ and tongue as described. Thorax as described, save that the inflated scutellum varies and is sometimes scarcely noticeable. Sometimes an obvious though hardly prominent scale tuft prevents the ready recognition of this feature. Legs as described. Abdomen as described.

The wings vary considerably in form. Types like *aprica* agree rather well with the European forms. They vary to a more pointed, longer form as in *candefacta*, the hind angle being sometimes a little marked. A few species have them quite long and narrow as in *lanceolata*, *angustipennis*, etc. The venation also tends to become variable. In the primaries the accesory cell may be present or absent in one species (*candefacta*), but usually the normal noctuid

type is found. On the secondaries vein 8 may arise from the root or from the subcostal, and if the former it may reunite with the subcostal to form a loop at base, or it may run entirely free. As a rule it joins the subcostal close to the base and runs contiguous with it to the root.

It is in the origin and character of vein 5 that the greatest and most radical variation occurs, for we have within the limits of the genus, as recognized here, perfect trifids, perfect quadrifids and very good intermediids. There is even a very considerable range within the limits of one species. The forms in which vein 5 is weak, arising from the cross-vein well removed from the median and not connected with it by a strong spur, are *sutrix, megocula, neocula, elegantula, cretata, behrii, virginalis, binocula, meskei, tenuicola, libedis, neomexicana, candefacta* and *erastroides*. These are typical trifids.

The species in which vein 5 is as fully developed as the others and arises out of the median at the end of the cell, directly or on a very short spur, are *flavicosta, angustipennis, major, lanceolata, gonella* and *areli*. All these are true quadrifids, and, except *areli*, all are narrow winged species. But not all narrow-winged species are included; and *areli* varies a little, tending to the third series, in which vein 5 is little if any weaker than the others, and is from a longer or shorter stout spur out of the median, and not from the cross-vein.

The species belonging to this third series are *terminimaculata, delecta, flavipennis, abdominalis, lactipennis, expolita, sedata, nuicola, lucasi, biplaga, quadriplaga, schwarzii, arida* and *coquillettii*. All these might be called intermediids.

In one point nearly all these species agree; they have veins 3 and 4 forked from the median at some distance beyond the cell. *Expolita, neocula* and *cretata* are exceptions, 3 and 4 separating at the end of the cell; *libedis* is almost at the other extreme, the fork occurring beyond the middle of the distance to the margin. The venation therefore is as variable as it can well be within the family limits.

The scale covering of the upper surface is usually smooth and glistening giving the insects a characteristic appearance.

In the arrangement of the species several methods may be adopted, based primarily upon the narrow, broad or triangular wing forms, upon the pattern of maculation on the primaries, upon the color of the secondaries, upon the structure of the front,

upon the venation, or upon the colors of the head and thorax. Neither of these will give a natural sequence in all cases, and the arrangement adopted here is a mixed one based upon ease of recognition, which also associates into small groups closely allied species; though the groups are not always in the best natural relation to each other; but then we cannot hope to get natural objects in a linear series in any case.

The first two species, which may be considered as entitled to generic rank, have the front produced in the form of a flat chisel-like protuberance, and this series I have called *Tornacontia*. The species are *sutrix* and *megocula*, the character just given separating them readily from all the other species. They are larger forms, with the primaries a little pointed. In *sutrix* the base is mainly white or creamy to beyond the middle, where the lower dark half is squarely cut off from the upper paler region. At first sight this species looks like a larger form of *tenuicola*, in which, however, the front is merely inflated. *Megocula* has the primaries entirely gray, the orbicular a small black dot, the reniform large, white ringed, prominent, s. t. line white. It is a peculiar and easily recognizable form.

Two species, *angustipennis* and *flavicosta*, have the front conically produced and abruptly cut off at the tip. These may be called *Conacontia*, and they resemble each other in the narrow primaries, general similarity in maculation and dusky thoracic disk. They are easily associated with *lanceolata* on superficial characters, agreeing fairly well also in size.

In *flavicosta* the secondaries have a yellowish tinge and the pale shades of primary are distinctly creamy. The light color extends along the costal region to the s. t. line, usually unbroken, but sometimes tending to become interrupted beyond the middle.

Angustipennis much resembles this, but the secondaries are gray rather than yellowish, and the costal region of primaries is white. This white space is much narrower than in *flavicosta*, and is always more or less interrupted at and beyond the middle of the wing.

In all the other species the front is flat, protuberant or bulging, smooth or a little roughened, but never either conical and truncate or chisel like. There is some little individual variation here within specific limits, which makes it impossible to use this modification further for main divisions.

Terminimaculata is altogether different in color from all the other

species. It is whitish only at base and along costa; t. a. line a brown band, inwardly oblique from below costa; median space bluish gray, t. p. line sinuate, a red brown curved shade beyond it at the inferior half, altogether different from the other species, which are white, gray, black or olivaceous, but have no red or extensive brown shadings.

Flavipenuis, *abdominalis* and *delecta* have the abdomen dusky and ringed with whitish or yellow; a character easily recognized and sharply distinct from the uniform white or gray of the other species.

Flavipennis is a dark, broad-winged form, secondaries tawny, with a broad black margin, primaries mostly black, with two quadrate white costal patches, the largest white square containing the small, round orbicular.

Abdominalis is similar in wing form, but lacks all yellow in the secondaries, and the primaries have much more white; in some examples, indeed, the basal half is white.

The posterior thoracic tuft in both the above species is well developed and the front is full though hardly inflated.

Delecta is much brighter throughout, larger and longer winged, secondaries yellow, with narrow, incomplete, smoky outer band; primaries with smooth, glistening, somewhat metallic vestiture. A broad, somewhat olivaceous bar extends from the basal third of costa toward the hind angle, the space above and below this white, more or less broken by darker shadings. The front is entirely flat.

All the remainder of the species have the abdomen unicolored, pale; and among them *lactipennis* stands out at once by its chocolate colored head and thorax. The body vestiture is composed of broad, shining scales, and the posterior thoracic tuft is obvious. The front is inflated and a little bulging. The primaries are chocolate brown at base, and have a broad olivaceous band before the outer margin, through which is a bluish, zigzag line. The secondaries are white, with an outer smoky or blackish border, variable in width, but always rather narrow.

Major, *expolita*, *lanceolata* and *gonella* have the head and collar white or yellowish, the thorax else gray or brown.

Major is a large species, in which the abdomen and secondaries are distinctly yellowish. The costal region is broadly white and squarely cut off at the s. t. line. The dark shade of the lower portion of primaries is broken at the t. p. line, and there is no complete

connection with the dark apical patch. The front is distinctly inflated and protuberant.

Expolita is much smaller, the secondaries and abdomen are merely tinged with yellow, and the dusky shading of primaries extends without break from the inferior base to the apex. The lower half of the outer margin and fringe is creamy white, making a decided contrast in color. The front is flat or scarcely convex.

In *lanceolata* the secondaries are white, with a narrow, smoky outer border; in the female sometimes smoky throughout. The species is rather large, the primaries with the lower half continuously gray or dusky to the t. p. line. The costal region is white, broken into two or three blotches by gray transverse maculation. The front is convex or slightly protuberant.

Gonella is decidedly smaller, the secondaries more dirty fuscous or smoky. The primaries have the dark shading of the lower half broken on the median space, so that the arrangement of the maculation is transverse, rather than longitudinal. The front is flat or only a little convex.

Sedata has head and thorax gray, a little mottled, and the primaries are also gray, two quadrate white costal patches representing most of the light maculation. The front is protuberant, bulging and rough.

Nuicola and *lucasi* have the thoracic disc only, gray in color. *Nuicola* much resembles *sedata* in wing form, in the protuberant rough front and in the general type of maculation. The base is always white, however, as is the basal half of the median space at least.

Lucasi is much closer to *lanceolata* in appearance, size and general type of maculation. The costal region is unbroken white to the s. t. line, indented by the dark reniform. The front is convex only.

Biplaga, *aprica*, *areli* and *erastroides* have the head and sometimes part of the collar dark, the thorax otherwise white. They are allied in a general way, yet easily distinguished.

Biplaga is mostly gray or blackish, with two quadrate, white, costal patches. The base may be white in part, or, in rare cases, nearly all white; but the median space is always solidly dark except for the costal patch. The front is protuberant and rough at the tip.

Aprica is white at the base and to at least the middle of the median space; along the costa the white shade extends to the s. t.

line, but usually broken on t. p. line so as to form one quadrate patch. Front as before.

Areli is pale to the middle of the wing for its full width, is then dark outwardly, except for a quadrate, white costal patch toward apex. The front is flat, scarcely convex and not at all rough. By its even division through the middle, this species is readily distinguished. It is also a little larger than its immediate allies.

Erastroides is altogether different from the species with which it is here associated; but, indeed, it does not closely resemble any other of this genus. The primaries are rather short and broad, the outer margin rounded, so that in wing form the species stands by itself. And that the dark shading, though broad on the inner margin, is terminated below the costa so that this is white to the apex, and the difference from all others in this immediate series is obvious.

In the remainder of the species the head and thorax are entirely white.

Quadriplaga resembles *biplaga* in color, wing form and in the two quadrate, white costal patches in each wing. But it is distinctly smaller and the secondaries have a yellowish tinge.

Schwarzii and *arida* are forms in which the dark shading starts on the internal margin within the middle, extends obliquely to the reniform, then runs parallel with the costa nearly to the s. t. line where it breaks squarely to the costa. A dusky shading from the costa at the t. p. line tends to and often does cut off a quadrate white patch. Even when it does not, the square termination of the white gives the impression of such a spot.

Schwarzii is the larger of the species, and the dark shadings are smooth, glossy steel-gray. This dark shading invades the base, but is indefined. The front is rough and a little protuberant.

Arida is a brighter, more definitely marked species. The dark shadings are olive-gray, and a yellow tinge seems to pervade the wing without being definitely localized. The course of the yellowish s. t. line is characteristic, forming a prominent, acute, upward tooth opposite the anal angle. The front is smooth and only a little convex.

In all the remaining species the base is white or creamy to or beyond the middle, though it may be clouded with gray or crossed by gray lines. Usually the gray shading begins on the inner margin at or beyond the middle and curves toward the apex, reaching the costa at or about the s. t. line. Sometimes it includes the

terminal space and sometimes it does not. Sometimes yellow or olivaceous replace the gray, or there may be a mottled effect produced by the presence of all three.

Coquillettii, neocula, cretata and *behrii* have neither orbicular nor reniform. Of the orbicular no trace exists; the reniform is sometimes obscurely indicated in individual examples, but usually there is not even a trace.

Coquillettii differs at once from the others in having the secondaries black, with white fringes. The primaries have a yellow tinge, two dusky clouds on the costa and a broken dusky s. t. band. The front is full and a little bulging, but hardly protuberant.

Neocula has the dusky outer band narrow, the basal and median space almost unbrokenly white. There is, occasionally, a small costal cloud, and very rarely a trace of a basal cloud; but these are exceptional and so poorly marked that they are readily overlooked. The front is convex and a little roughened, but hardly protuberant.

Cretata has the outer gray shading broader, more defined. There is more or less gray along the costa, sometimes extending to base so as to make visible the t. a. line in the costal region. The two last named species are very closely allied, but from the series at hand seem to be distinct. The front is a little protuberant in some examples, but usually convex only.

Behrii has the outer shading much more aggressively marked with rougher, black scales, the s. t. line slender, blue, marked by black spots and shades. The t. a. line is gray and completely defined across the wing. The front is scarcely convex.

Elegantula, virginalis and *binocula* lack the orbicular, but have the reniform present and obviously marked in all examples.

Elegantula is easily recognized by the continuous dark band across the middle of the wing, beyond which it is dusky. It is thus almost half white, half dusky and always readily distinguished. The front is conically protuberant but not truncate at tip. Nevertheless it is close to the *Conacontia* type.

Virginalis has a yellow median shade band which is traceable in all examples and usually obvious, though by no means contrasting. The entire wing has a somewhat yellowish tint beyond the middle, the dusky oblique shade being narrow and broken. The reniform is a solid round gray spot, with a narrow white annulus. The front is convex and tends to become protuberant.

Binocula is similar to the preceding, but with the yellow band

much less marked, the dark shading much broader, and in all respects much better defined. None of the specimens that I have seen had the oblique band at all broken, and in all of them it begins at almost the exact middle of the hind margin. The front is convex, a little inflated, but hardly protuberant.

In all the remaining species the orbicular is represented by a more or less obvious black dot, the reniform being also obviously present in all cases except *meskeana*, where it is either wanting or merely traceable.

This latter species has a faint yellowish tinge throughout, the dark shading begins on the inner margin beyond the middle, extends to the median vein and is then abruptly cut off to the s. t. line, along which it then extends to the costa. The median lines are both marked by black spots on the costa. The front is protuberant and roughened.

Tenuicola is of the same general type, but much darker as well as smaller in size. The dark shading often begins on internal margin at the t. a. line, and always before the middle, while the s. t. space is all dark except the costa. The reniform is always distinct, whitish centered and dark ringed. The front is protuberant and a little roughened at tip.

In *neomexicana* and *candefacta* the dusky shading is smooth, a little olivaceous and narrows gradually, embracing half of the reniform which is solid gray, annulate with white. There is a more or less obvious, yellow, median shade from a dusky costal blotch.

Neomexicana is much the paler, and the outer dusky band is broken, much narrower than in *candefacta*. The secondaries are white, the front is protuberant and roughened.

Candefacta has the secondaries largely smoky, with contrasting white fringes. The outer dusky shading of primaries begins at or within the middle of the internal margin and extends without break to the apex. The front varies from inflated to strongly protuberant, and is more or less roughened.

Taraehe ardoris Hbn., I have not identified among the material in my posession. South American examples are in the Neumoegen collection, and Mr. Grote has doubted the North American habitat of the species. Unfortunately, I have had no material from Georgia or Florida, hence cannot say positively that the species does not occur. The species resembles *candefacta* in a general way but has narrower primaries and a yellow tinge to the secondaries.

For the present it must be, if doubtfully, held among our species.

SYNOPSIS OF THE SPECIES.

1. Front of the head produced into a long process with a flat, chisel-like tip. **Tornacontia** 2.

   Front conically protuberant to a round, small, truncated tip, which is rough and bare..... **Conacontia** 3.

   Front flat, convex, inflated or protuberant, smooth or rough; variations being found in the same species..... **Acontia** 4.

2. Primaries white or creamy to middle, where the lower dark half is squarely cut off from the paler costal region..... **sutrix.**

   Primaries all gray; orbicular a punctiform black spot; reniform large, round, blackish, white ringed, prominent..... **megocula.**

3. Costal region of primaries broadly yellowish to the s. t. line, usually unbroken; secondaries with a yellowish tint..... **flavicosta.**

   Costal region of primaries narrowly white, usually interrupted by dark bars; secondaries gray..... **angustipennis.**

4. Primaries mainly reddish brown in tinge, whitish only at base and along costa, an inwardly oblique brown band forming the t. a. line. **terminimaculata.**

   Primaries ranging from white to black and white spotted, without red or red-brown marks or bands: usually white, with gray, yellowish or blackish shadings..... 5.

5. Abdomen dark or blackish, conspicuously ringed with white or yellow..... 6.

   Abdomen concolorous with secondaries, never obviously ringed or banded.. 8.

6. Primaries moderately elongate, trigonate; secondaries yellow, with an incomplete outer smoky band; primaries with a broad dark bar from basal fourth of costa diagonally across the disc..... **delecta.**

   Primaries short and broad, outer and inner margin almost equal in length; primaries without the discal bar..... 7.

7. Secondaries blackish, disc and fringes tawney; primaries mostly black or gray, with large quadrate, white costal spots..... **flavipennis.**

   Secondaries blackish, disc and fringes whitish; primaries in general as before but with much more white..... **abdominalis.**

8. Head and thorax chocolate brown; primaries with a chocolate brown patch at base..... **lactipennis.**

   Head and collar white or yellowish, thorax else gray or brown..... 9.

   Head and thorax all gray, a little mottled..... 10.

   Head white, disk of thorax gray..... 11.

   Head gray or black, thorax white..... 12.

   Head and thorax all white or creamy..... 13.

9. Secondaries and abdomen yellow; size large; dark markings of primaries continuous along inner margin, broken between the median space and apex..... **major.**

   Secondaries and abdomen with a faint yellow tinge; size small; dark markings of primaries continuous from base to apex, leaving the costa white..... **expolita.**

   Secondaries and abdomen whitish; dark markings of primaries continuous along inner margin and to apex: costal white region broken by two broad bands, which are usually incomplete; larger..... **lanceolata.**

   Secondaries smoky outwardly; primaries mottled, median space white to the inner margin..... **gonella.**

10. Entire thorax gray; primaries mostly gray, two large, quadrate, white costal patches representing most of the white markings.....**sedata.**
Disc of thorax gray, patagiæ whitish; primaries mostly white at base and to the middle of the wing.....**nuicola.**
11. Costal region broadly white to s. t. line; dark shade continuous along internal margin to s. t. line, then upcurved to apex .....**lucasi.**
12. Primaries mostly gray or black, with two quadrate, white costal patches; basal space more or less white mottled.....**biplaga.**
Primaries white to the middle of median space, more or less gray mottled; one quadrate, white costal patch before the apex, not always completely separated off.. .....**aprica.**
Primaries with basal half white or creamy, rigidly separated from the dark outer half, which is broken on the costa before apex by a quadrate, white patch.....**areli.**
Primaries creamy white; from median shade to s. t. line on inner margin a dark shade extends to the cell and obliquely outward to vein 7, leaving the costa clear to the apical region.....**erastroides.**
13. Primaries chiefly gray, leaving two quadrate white spots on the costa ....14.
Primaries more evenly divided between white and dark, the dark shadings so arranged as to provide for a quadrate, costal white patch before apex, though this may not be completely separated off.....15.
Primaries white or creamy from base to or beyond middle, clear and interrupted; outer portion of wing gray, yellow or olivaceous, not squarely terminated in the costal region so as to indicate a quadrate ante-apical patch .....16.
14. Resembles *biplaga;* orbicular wanting, secondaries decidedly yellowish.
quadriplaga.
15. Larger; primaries smooth, steel-gray and white, the shade undefined; s. t. line without notable peculiarity.....**schwarzii.**
Smaller; creamy, with yellowish and olive smooth shadings; s. t. line yellowish, unusually broad and distinct, forming a prominent, acute upward angle opposite the hind angle .....**arida.**
16. Orbicular absent.....17.
Orbicular present as a more or less defined black dot .....22.
17. Reniform wanting.....18.
Reniform present.....20.
18. Secondaries black, fringes white; primaries with a creamy shading.
coquillettii.
Secondaries white .....19.
19. Outer gray shading narrow, smooth, costa rarely with a trace of gray clouds basally.....**neocula.**
Outer gray shading broader, more defined; costal region more or less gray clouded, so as to usually define the t. a. line.....**cretata.**
Outer dark shading blackish, with rough black and blue scales....**behrii.**
20. Base unbroken white to the middle, then gray or darker, rigidly defined by a broad median band.....**elegantula.**
Basal white shade extends along costa to s. t. line; the dusky outer shadings not rigidly defined .....21.
21. Size larger; a yellow median shade line; a narrow, yellowish and gray curved band from outer third of inner margin to apex...**virginalis.**

Smaller: yellow median shade more obscure; outer shadings gray or olivaceous, broad, beginning at or within middle of inner margin. **binocula.**

22. The dark shading is sharply defined inwardly and abruptly cut above the middle of the median space.....23.

Dark shading less well defined, evenly oblique inwardly, not abruptly cut or narrowed above the middle of median space.....24.

23. Reniform obscure or wanting; outer dark margin narrow, base white or creamy to the middle and in the costal region almost to the s. t. line. **meskei.**

Reniform distinct, round, white centered; outer dark margin broad; base white or creamy only to the t. a. line or a little beyond...**tennicola.**

Reniform as before, dark shade forming only a large quadrate patch on the inner margin, else luteous or olivaceous, except at base....**libedis.**

24. The dusky shade is smooth, glossy and extends to the apex.....25.

25. Secondaries white or nearly so; outer dusky band of primaries narrow and broken.....**neomexicana.**

Secondaries more or less smoky, with white fringes; altogether darker; outer dusky shading of primaries begins at or within middle of inner margin and extends, unbroken, to the apex.....**candefacta.**

Tornacontia sutrix Grote.

1880, Grt., Can. Ent., xii, 154, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia.*

Head, thorax and abdomen white, with a faint yellowish tinge, which is best marked on the abdomen. Palpi short and weak, hardly exceeding the front of the head. Primaries creamy white at base: below median vein this is bounded by a broad black median shade, which is upright and conspicuous from median vein to inne rmargin: above this the creamy shade extends into the s. t. space, though irregularly and not definitely bounded anywhere. T. p. line fragmentary, deeply sinuate, mostly olivaceous, partly black marked. S. t. line white, broad, very irregular, sending a long spur into the submedian interspace. This line is partly preceded by luteous brown, and in the lower half of wing by irregular bluish and gray mottlings. Terminal space mottled with leaden gray, or ochreous and white, the apex always dark. A broken black terminal line. Fringes mostly dark, with a prominent white patch below the middle. Orbicular black, punctiform, always present. Reniform upright, oval, incompletely outlined in black, followed by a rather prominent black spot which rests on the t. p. line. Secondaries smoky or paler, glistening; fringes white. Beneath, primaries smoky to blackish, irregularly paler along the outer and costal margins. Secondaries white or faintly yellowish, the outer margin dusky, a dusky half band from costa, and a small discal lunule.

Expands 20–25 mm. = .80–1.00 inches.

Hab.—Colorado, June; Poncha Springs in July; Denver in August; Nevada; Arizona; New Mexico.

Twenty two examples are before me, and no two are alike. The tendency is, primarily, to soft, silver gray shadings in the pale basal space, which may become so complete that only a pale t. a. line is

left. The first tendency in these shades is to define such a line, next to complete the median shade, and next to define the t. p. line. Yet, with all this variation of mottling, the maculation as first described is easily distinguishable in all cases. The species seems to be rather a common one in its range.

Tornacontia megocula n. sp.

Head, thorax and abdomen white. Primaries almost uniformly steel gray, white powdered in the basal space, and the t. a. line faintly indicated. A whitish longitudinal streak is in the cell, extends from the orbicular to the reniform and beyond it to the outer margin. S. t. line white, only a little irregular. A whitish costal patch before the s. t. line, and the veins are cut with white through the terminal space. The orbicular is a slightly elongated black dot. Reniform large, black powdered, annulate with white, round, conspicuous. Secondaries white, with a vague smoky outer border. Beneath, primaries smoky, costal and outer margin a little paler; secondaries white.

Expands 30 mm. = 1.20 inches.

Hab.—Southern California (Barnes).

One female, in fair condition only. The species is very distinct and at once separable from all the others near it in structure by the uniform gray suffusion and by the large round reniform, which is annulate with whitish. The frontal structure is essentially as in *sutrix*, but the chisel-like tip is narrower. The median vein forks into 3 and 4 about one-third beyond the end of the cell, and in this the species agrees with its generic ally. In both species also vein 5 arises from the cross vein almost midway between 4 and 6, though nearer to 4. It is practically as strong as the remainder of the veins.

Conacontia flavicosta n. sp.

Head and collar creamy white, a very little shaded with gray. Thorax else ocherous brown. Abdomen with a slightly yellowish tinge. Primaries cream yellow along the costa from base nearly to the s. t. line extending inward to the middle of the cell or even below the cell itself, the tendency being to narrow at the outer portion of median space. The median shade may be marked on the costa, and, at the inception of the t. p. line, there may be an olivaceous shading which tends to cut off an irregular ante-apical patch. The inferior half or $\frac{2}{3}$ of the primaries, from base to s. t. line and extending through s. t. space to costa, is a brownish gray, varying a little toward luteous or olivaceous. T. a. line sometimes distinct, single, dark, upright from inner margin to the costal shade, sometimes altogether wanting. Median shade a whitish, yellowish or bluish irregular indefined band, which may also be wanting. T. p. line usually indicated on costa, indicated by black scales beyond the reniform, deeply incurved below the cell, and visible in all specimens as a broken black single line. S. t. space partly leaden filled, varying to whitish mottlings inferiorly. S. t. line white on the costa, yellowish and diffuse toward hind margin, often taking in all the terminal space at the hind angle. Terminal space more or less gray filled, always dark at

the apex. A broken black terminal line. Fringes mostly gray, a whitish patch at about middle and another half way between it and apex. Orbicular punctiform, small, often wanting. Reniform obscure, at its best upright, oval, the sides outlined by black or olivaceous scales. On some examples it is barely indicated. Secondaries smoky yellowish, very light and a little glistening. Beneath, primaries yellowish, disc smoky; secondaries white, smoky toward outer margin.

Expands 23–27 mm. = .92–1.08 inches.

Hab.—Hot Springs, New Mexico, 7000 ft. (Hulst); Colorado (Bruce); Black Hills, Montana (Hulst).

Seven examples, five of them males, are before me. They vary in the amount of dark shading, but in no case is the yellowish costal shade cut before the inception of the t. p. line and then incompletely. As it happens, both specimens where this occurs are females, and it may be that in this sex there is uniformly more gray. Four of the males have the creamy margin unbroken to the s. t. space.

Vein 5 is as strong as the others and from the median at the end of the cell. Veins 3 and 4 branch one-third from the end of the cell.

Conacontia angustipennis Grote.

1875, Grt., Proc. Acad. Nat. Sci. Phil., 1875, 426, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia.*

Head and collar white or with a faint yellowish tinge, more or less gray mottled. Thorax else smoky gray or brownish. Abdomen yellowish, pale gray. Primaries white or faintly yellow tinged along the costal margin, the costa itself gray shaded. The white shade extends from base above the median vein to the median shade. It is there interrupted in whole or in part, and beyond this the white is reduced to half its width and again interrupted at t. p. line, leaving an irregular though subquadrate spot in the s. t. space. The dark shading of the wing is smoky gray, sometimes with an olivaceous tinge, extends through the lower part of the wing from base to s. t. line and through s. t. space to the apex. S. t. space bluish or white mottled inferiorly, varying in amount. Terminal space white mottled, except at apex where it is gray, emphasized by a small black spot. T. a. line traceable in most specimens through the dark portion of the wing, single, upright. Median shade olivaceous on costa where it starts as a triangular patch, wholly or almost crossing the pale costal space, usually lost in the darker shade. T. p. line starts from an olivaceous quadrate costal patch varying in size, fragmentary over the cell, deeply incurved below and made up of blackish, lunate, interspaceal marks through the dark shading. S. t. line white on the costa, broken and irregular at apical fourth, then diffuse and more or less filling the terminal space. A black terminal line, broken on the veins. Fringes long, gray at base, violaceous outwardly, cut with white at apical fourth. Orbicular wanting, or a small black dot only. Reniform round or nearly so, olivaceous ringed, sometimes olivaceous filled as well. Secondaries grayish to smoky, with white fringes. Beneath faintly yellow tinged, primaries with disc irregularly smoky; secondaries with a small discal lunule and a narrow, smoky outer border.

Expands 25–28 mm. = 1.00–1.12 inches.

Hab.—Ft. Collins, Colorado (Gillette); Glenwood Springs, Colorado (Barnes); New Mexico; Pierre, South Dakota (Trnman).

Five examples, only one of which is a male. Compared with the preceding, the present species is much more gray, the white costal shading much more broken up and never extending below the median vein. The tendency here is to a round, solid gray reniform, three of the five specimens being so marked.

The venation of the secondaries is practically as in *flavicosta*.

Acontia terminimaculata Grote.

1873, Grt., Bull. Buff. Soc. Nat. Sci., i, 153, *Tarache*.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii. 162, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 301, *Acontia*.

Head and thorax bluish pale gray, varying toward yellowish in some cases. Abdomen yellowish pale gray. Primaries creamy or bluish gray in basal space and along costa to t. p. line. T. a. line a broad, inwardly oblique brown or blackish band, which does not cross the costal region. Median space bluish or violet-gray; outer portion above, blackish powdered before t. p. line; below with a bright rusty red-brown half band, anteriorly defined by a white median line which does not extend above the middle, outwardly by the t. p. line. T. p. line an oblique white mark on costa, defined by a blackish shading opposite the cell, deeply incurved and whitish below the middle of the wing. S. t. space more or less brown shaded, tending to luteous toward the hind margin on which rests a violet shade. S. t. line indefinite. A series of black terminal dots on the veins. Orbicular a small black dot or wanting. Reniform large, with a vague smoky outline, else concolorous. Secondaries yellowish to smoky, with concolorous fringes. Beneath, primaries tawny, with a smoky disc. Secondaries paler, with a narrow smoky median line which may be obsolete.

Expands 25–27 mm. = 1.00–1.08 inches.

Hab.—Massachusetts; New York; New Brunswick, New Jersey, August 18th; Illinois in August. Probably occurs throughout the Middle and Central States.

Three specimens only are at present under examination; but I have seen many others that did not differ essentially in appearance. The variation is chiefly in the differences of shade of the lighter portions of the wing, and this ranges from almost white to decided cream yellow in one direction, to almost violet in the other.

The body is, on the whole, more robust than in its allies, and the wings are a little broader. The inner margin is sinuate and the hind angle is a little drawn out or produced. On the posterior wing the 3rd and 4th veins arise from the end of the cell and 5 arises from a little spur, close to and as strong as the submedian.

Acontia delecta Walker.

1857, Wlk., Cat. Brit. Mus., Het., xii, 799, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, *Tarache*.
1874, Morr., Proc. Bost. Soc. N. H., xvii, 212, *Tarache*.
1888, Weeks, Ent. Amer., iv, 46, larva.
1892, Beut., Bull. Am. Mus. N. H., iv, 68, larva.
1893, Smith, Bull. 44, U. S. Nat. Mus., 301, *Acontia*.

metallica Grt.

1865, Grt., Proc. Ent. Soc. Phil., iv, 327, pl. ii, f. 7, *Acontia*.
1868, G. and R., Trans. Am. Ent. Soc., ii, 78, pr. syn.

Head, collar and disc of thorax dark chocolate-brown, overlaid by metallic gray or blue scales. Patagiæ white. Abdomen pale yellow, banded with blackish. Primaries white from base to outer third of wing, interrupted by a broad band of metallic gray and mossy dark green, which extends from basal fourth of costa diagonally across the disc to a little below the middle of the dusky outer shading. The white shade is also interrupted by a metallic gray spot at basal third of inner margin. T. p. line is indicated by a mossy green costal patch, is lost in the white space, and reappears below it as a narrow, metallic blue line, preceded by a mossy green shading. S. t. space mostly deep carmine, with blue metallic interrupting lines. S. t. line metallic blue at inception, white, with metallic shadings from apical third. Terminal space white, except toward and at apex. A series of terminal black, venular marks. Fringes mossy at inner angle, then white to middle, the upper portion mostly metallic steel or blue gray. No apparent orbicular. Reniform a mossy green, indefined blotch, which may be absent. Secondaries yellow, with a broad blackish outer band, which does not extend to the anal angle. Beneath yellow; primaries with a black or blackish disc, and a black anteapical costal spot. Secondaries with a black anteapical costal spur.

Expands 25–28 mm. = 1.00–1.15 inches.

Hab.—New York and southward to Florida and Texas; not common.

This very handsome species is so much different from all its allies that recognition should be easy. The wings are moderately developed, the hind margin a little sinuate, hind angle not notably produced.

On the secondaries, the median vein forks at about one-fourth from end of cell; vein 5 is from a short spur at the end of the cell near to the submedian and about as strong as the others.

Morrison lists *delecta* from Texas, May 5th and 7th; but judging from what he says in connection with this, it seems almost certain that the species before him was *abdominalis* Grt., and not the form here referred to.

Acotia flavipennis Grote.

1873, Grt., Bull. Buff. Soc. Nat. Sci., i, 153, *Tarache*.
1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia*.

Head and thorax black, relieved by scattered white scales. Abdomen black, segments narrowly white ringed. Primaries mostly black or dark smoky brown,

variably marked by white. There is always a large irregular white costal patch which includes the black, punctiform orbicular and extends to the narrow, upright black reniform; in one case it included this spot. A second white, much smaller patch, is at the inception of the t. p. line. In one example the terminal space is mostly white, in three others it is uniform with the dark shading. Three specimens have a more or less obvious whitish patch on the middle of the inner margin; two specimens have a whitish streak from base to t. a. line, which latter is white marked in one example. T. p. line a series of black interspaceal spots, sinuate in general course, sometimes accompanied by metallic blue scales. S. t. line white, slender, more or less broken, irregular, preceded by black scales which, in one case, seem to have obsorbed the white. A series of black terminal marks on the veins. Sometimes all beyond the t. p. line is deep red-brown. Secondaries black, with the disc tawny yellow, veins and a discal lunule black. Beneath, tawny yellow, in one case with only a discal lunule and a costal mark at outer third black. Usually there is a black outer margin, an outer half band and a black discal spot. The primaries may have part of the disc also blackish.

Expands 20-25 mm. = .80-100 inches.

Hab.—San Diego, Sonoma and Placer Co. (June), California; Sierra Nevada; Oregon.

Four examples, male and female, selected from a series to show variation, are under examination. Of what this variation consists has been sufficiently indicated in the general description. The wings are broad, outer margins rounded, apices obtuse. The secondaries branch 3 and 4 one-third from end of cell; 5 is as strong as the others, and is from a short spur of the cross-vein close to the median.

The species should be readily recognized by the tawny secondaries and very dark primaries, on which the two white costal patches only are really relieved.

Acontia abdominalis Grote.

1877, Grt., Can. Ent., ix, 157, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia.*

Head and thorax smoky gray-brown; collar white lined at base and sometimes white mottled, patagiæ white edged and rarely all white. Abdomen dark smoky, narrowly white ringed. Primaries mainly white to the outer portion of median space. The basal space is always gray mottled, at least on costa and may be entirely gray, in which case the t. a. line is indicated as nearly upright, a little angulated on the median vein. From this angle a gray shade may extend across the white portion of the median space dividing in into two large subquadrate patches. T. p. line starts from a white costal spot, is then black, broken on the veins, the spots irregular, sinuate in course, usually preceded by metallic blue scales. S. t. space more or less red-brown, rarely gray. S. t. line white, preceded by black scales and shadings. Terminal space irregularly mottled with white, gray, blue and black, no two specimens alike, save that the apex is always dark. A broken black terminal line. Fringes mostly dark, but always broadly cut

with white below the middle. Orbicular black, punctiform, always present on the white shading and usually well marked. Reniform gray or blackish, oval, not well marked, often lost in the dark shading. Secondaries mostly blackish, becoming pale basally and with a dusky discal lunule. Beneath curiously mottled with black and yellowish white. Primaries black, inner margin, part of costa, part of terminal space, an ante-apical blotch and a triangular discal blotch pale. Secondaries mostly pale; a black outer band, from which a central ray is sent to the base; a discal lunule, a half band from the costa, and one or two rays from the base, all blackish.

Expands 21–26 mm. = .84–1.04 inches.

Hab.—Kansas in May; Arizona; Texas, March, May, September, December.

Eight specimens, representing both sexes, are under examination and no two of them are alike. The two extremes are: a base uninterruptedly white to the outer portion of median space, and a wing solid gray, with two quadrate costal patches, a whitish longitudinal shade over submedian vein, and a whitish patch on internal margin. Between these extremes all possible intermediate forms occur.

In wing form and general habitus this species resembles *flavipennis*, as it does also in the venation of the secondaries. Vein 5 seems to be a little more remote from the median, but otherwise there is no difference, and this is hardly appreciable in some cases.

Acontia lactipennis Harvey.

1875, Harv., Bull. Buff. Soc. Nat. Sci., iii, 10, pl. ii, f. 3, *Tarache.*

1875, Harv., Can. Ent., vii, 135, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia.*

Head and thorax glistening chocolate-brown. Abdomen white. Primaries with an oblique chocolate patch at base, narrow on costa, extending to about one-fourth on inner margin; beyond this, white to the outer part of median space. At the outer portion of wing is a deep, dark mossy green band, extending from just within the hind angle, first a little incurved, then outcurved, to the apex, leaving the terminal space white. A narrow denticulated metallic blue line runs through this shade, representing the s. t. line. A yellow spot at outer third of costa sends an oblique yellow shading outwardly to join the band at about the place of the reniform. This is variably evident and is about the only variable feature in the wing. The ordinary spots are wanting. Secondaries white, with a variably distinct outer band, sometimes complete, more rarely starting broadly at the apex and narrowing to nothing a little before the anal angle. Beneath, primaries blackish, except along the margins. Secondaries white.

Expands 24–28 mm. = .96–1.12 inches.

Hab.—Texas, April to June.

Eight examples, evenly divided as to sex, are before me and I have seen numerous others. This is one of those satisfactory spe-

cies that is easily recognizable and obviously distinct from any allies. The variation is scarcely appreciable and the chocolate-colored head, thorax and base of primaries are characteristic.

The primaries are moderately elongate, trigonate, outer margin oblique, convex, apex marked. Secondaries with 3 and 4 forking a short distance beyond the cell, 5 weaker than the others, arising from a short spur from the median.

Acontia major n. sp.

Head mostly brown, posteriorly white marked. Collar white. Thorax else brownish gray. Abdomen with a yellowish tinge. Primaries broadly white in the costal region, extending to the middle of the s. t. space, where it is squarely terminated. This shade may be uninterrupted, or it may have on the costa small black marks at the inception of the median lines. The lower half of the wing is gray-brown, more or less violet tinged to the t. p. line. At the apex is a quadrate patch of gray-brown, marked by black and blue scales, and between these dark shades is a gray irregular mottling. Lower half of subterminal and terminal spaces white, more or less gray mottled. T. a. line indicated by black scales through the dark portion of the wing. T. p. line marked in a fragmentary way opposite the cell and more evidently by black interspaceal lunate marks in the dark shading. S. t. line marked by black and blue scales in the dark apical patch, then lost in the white, or imperfectly defined by gray shadings. A series of prominent, black, interspaceal, terminal marks. Fringe gray at hind angle and at apical third, but mottled with white; elsewhere white. Orbicular a small black spot. Reniform small, gray, laterally black marked. Secondaries yellow tinged, with a smoky outer margin, which is broad on the costa and narrows to nothing at the anal angle. Beneath, primaries with disk blackish, margins irregularly yellow; fringes cut with blackish at apex, at one-third from that point and at the hind angle. Secondaries uniform yellow.

Expands 26–29 mm. = 1.05–1.16 inches.

Hab.—Colorada, without definite locality.

Two females from Dr. Barnes. It is probable that the the range of variation is greater than indicated in the two examples, but I have seen no others. The primaries are somewhat elongate, tending to subparallel, apices marked but scarcely prominent. In the secondaries vein 5 arises directly from the median at the end of the cell, is moderately strong only, and 3 and 4 fork about one third of the distance toward the outer margin. The body is robust, the head seeming, proportionately, to be rather small.

Acontia expolita Grote.

1882, Grt., Papilio, iii, 131, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 298, *Acontia.*

Head and collar white, thorax gray, a little mottled. Abdomen yellow tinged. Primaries with costal region white or creamy, unbroken to the s. t. line. Remainder of the wing gray, except the lower half of the terminal space and the

fringes opposite. This gray portion of the wing is shaded with mossy green violet and carmine, but not evenly, nor alike in the specimens. In general, the violet shades extend through s. t. space, sometimes forming a blue line, and then along inner margin. The green shades border the white anterior region, and the carmine shading is apical. In one example the t. p. line crosses the pale costal region as a narrow greenish line. The orbicular is wanting; reniform obscurely olive margined. Secondaries with a faint yellowish tinge. Beneath yellowish, primaries more positively so, the disk dark or blackish. Secondaries with or without an obscure discal lunule.

Expands 18-20 mm. = .72-.80 inches.

Hab.—Arizona; Round Mt., Texas.

Two males and two females, all very much alike and agreeing with the type. The species is very characteristic and, with its broad pale costal region and white hind angle is easily recognizable. The primaries are moderately long, trigonate, with long fringes. Secondaries with 3 and 4 forking at the end of the cell, not beyond as is usual; 5 decidedly weaker and from a short spur nearer to 4.

Acontia lanceolata Grote.

1879, Grt., Can. Ent., xi, 198, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia.*

Head mottled with gray. Collar white. Thorax else gray. Abdomen dirty white. Primaries white along costal region to the middle of the s. t. space where it is squarely cut off. The median shade is marked on the costa and may extend across the costal white space as a gray bar or a yellowish shading. T. p. line broadly marked on the costa, usually extending across the white space as a broad bar, though sometimes only as an olivaceous shading. There may be thus, along costa, a continuous white space from base to the middle of s. t. space; a white bar to t. p. line and a quadrate white patch beyond; or there may be a white bar to the middle, followed by two quadrate white costal patches. Below the median vein the wing is gray, becoming olivaceous and tending to mottled beyond the t. p. line toward the apex. S. t. and terminal space white mottled below the middle. Fringes mostly gray, cut with white at the middle and half way between it and tip. There is a series of evident, black terminal dots. T. a. line traceable through the dark color in some specimens as an upright, dusky shading. T. p. line is broken, sinuate, dusky, never more than traceable. S. t. line marked by blue and black scales in the brown apical patch, narrow whitish below, until it merges into the irregular mottling of the s. t. and terminal space above the hind angle. Orbicular absent. Reniform olivaceous, oval, sometimes white centered, sometimes only laterally outlined, in very dark specimens lost in the broad bar from the t. p. line to costa. Secondaries soiled whitish in the male, to slightly smoky in the female, fringes white. Beneath, the general shading of the primaries is obscurely produced, the lighter shades with a yellowish tinge. Secondaries white.

Expands 24-26 mm. =.96-1.05 inches.

Hab.—Texas; Argus Mts., Arizona, April.

Three males and two females, all in fair condition. No two are quite alike, yet all are so similar that their identity is without question. The range of variation has been practically discussed in the description, and consists chiefly in the relative amounts of white and gray. The primaries are elongate and comparatively a little narrowed. Secondaries with vein 5 nearly as strong as the others, arising out of the median at the end of the cell; 3 and 4 dividing nearly half way to the outer margin.

Acontia gonella Strecker.

1898, Strck., Lep. Rhop. et. Het., Suppl. 1, p. 11, *Acontia*.

Head white and gray mottled. Collar white inferiorly. Thorax else gray. Abdomen dirty white or yellowish. Primaries, upper half of basal space white, lower half olivaceous gray or brown, the division not accurate, sometimes more white, sometimes more gray. T. a. line in the form of a broad gray band, outwardly angulated at the middle, sometimes marked on the costa only, and then the basal white is connected with the white of the median space. Median space all white above the median vein, below that point, to the t. p. line, is a broad, olive-green band. Beyond this band the s. t. space is gray filled, making altogether a large subquadrate dark patch. T. p. line marked by an olivaceous gray shade on the costa, thence by a broken gray shade outcurved over the cell, and an incurved series of black lunules in the dark space below the reniform. An apical olivaceous gray patch extends half way through s. t. space on costa and squarely separated there from the white. S. t. line marked by a white costal dot, black and blue powdered through the dark apical space, whitish and diffuse below the middle. Between the dark quadrate patch resting on the inner margin, and the dark apex, the space is irregularly mottled, and no two examples are alike. There is a series of distinct black terminal spots. Fringes dark at apex and sometimes at hind angle; interval more or less completely white or yellowish. Orbicular a black or olivaceous discal spot, variably distinct. Reniform round or oval, solid gray or outlined, with pale centre. Secondaries smoky, with whitish base in the male, all smoky in the female. Fringes yellowish, with a smoky interline. Beneath, primaries dusky on disc; costa yellow, cut with blackish at outer third, pale along inner margin, fringes cut with yellow about middle and before apex. Secondaries yellowish, with a smoky outer margin, fringes yellowish. An oblique smoky bar outward from outer third of costa, changing to a slender line parallel with outer dark band. A smoky discal lunule.

Expands 20-24 mm. = .80-.96 inches.

Hab.—Phoenix, Arizona, April and August (Dr. Barnes); Arizona; Hot Springs, New Mexico, 7000 ft. (Dr. Hulst); Las Vegas, New Mexico (Cockerell, No. 800).

Four males and two females, all different. This species is similar to *sedata* in type of maculation but much more white, and somewhat larger. The division of the basal space into upper white and lower gray portions is characteristic. The primaries are rather narrow and elongate. Secondaries with 5 only a little weaker, from the

median, at the lower angle of cell, 3 and 4 branching about one-third to one-half beyond the end of the cell.

Acontia sedata Hy. Edwards.

1881, Hy. Edw., Papilio, i, 23, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia.*

Head and thorax gray, a few white scales giving a somewhat mottled appearance. Abdomen dull smoky. Primaries leaden gray, mottled with yellowish white in the basal space. A quadrate white costal patch, in which is the distinct black, punctiform orbicular. A smaller, white, also quadrate costal spot before the apex. T. a. line geminate, gray, white filled, obscure, outwardly oblique, a little outward tooth at its middle. A fragmentary blackish median shade is traceable in the lower part of wing. T. p. line broken, very irregularly marked, blackish opposite the cell, whitish toward inner margin, where a somewhat quadrate rusty brown patch fills the space between t. p. and s. t. lines. S. t. line whitish, broken, very irregular, preceded by black scales which are unevenly distributed. A series of black terminal marks. Reniform gray filled or only outlined in gray. Fringes a little white mottled at the middle. Secondaries smoky, fringes a very little paler. Beneath, costal region of primaries yellowish, cut with smoky at apical third, else smoky. Secondaries, disc yellowish, with a smoky outer border; at outer third of costa an oblique bar extends outwardly nearly to the outer band, where it changes to a narrow, smoky line, running parallel to the outer margin. A smoky discal lunule.

Expands 20–23 mm. = .80–.92 inches.

Hab.—Arizona; Texas.

Three female specimens only, none of them in the best possible condition and all different. I have not seen many of these; but one of my examples is directly compared with the type. The primaries are rather narrow. Secondaries have vein 5 decidedly weaker than the other, from a spur at some distance from the median; 3 and 4 separating about one-third from end of cell. Though so nearly resembling *gonella* in type of maculation, especially on the under side, the origin of vein 5 is remarkably dissimilar.

Acontia nuicola n. sp.

Head, collar and disc of thorax dull gray; patagiæ white. Abdomen with a yellowish tinge. Primaries yellowish white to the middle of the median space, and beyond that whitish above the median vein to the middle of the s. t. space, where it is abruptly and squarely terminated. The basal line is obscurely gray marked. T. a. line marked by a broad, band-like patch on the costa to median vein, then it suddenly becomes thread like and runs inwardly oblique, a greater or less distance toward the inner margin. T. p. line marked by an olivaceous costal patch, which may or may not break up over the reniform, marked by fragmentary black dots opposite the cell, deeply incurved and marked with black interspaceal spots below the cell. Between the middle of the median space and the s. t. line, and from the median vein to inner margin, is a dull gray shading, which may extend obliquely through the s. t. space to the apex, or may

be connected by a gray mottling merely. S. t. line white, broken, very irregular, more or less marked by black scales. A series of distinct, black, terminal marks. Fringes mostly gray, cut with white at or a little below the middle. Orbicular a small black dot. Reniform outlined in olivaceous, small, oval. Secondaries smoky, a little darker in the female. Beneath yellowish. Primaries darker outwardly, with a smoky discal spot, a partial outer band, which starts obliquely outward from outer third of costa, and fringes alternately blackish and yellowish. Secondaries with a smoky outer border, an oblique outward bar, changing to a narrow line and a discal lunule smoky.

Expands 19–22 mm. = .76–.88 inches.

Hab.—Texas, without special locality; all from the Hulst collection.

One male and two females; none in good condition. The species resembles *gonella* in general type of maculation; but differs not only in the white patagiæ, but in the course of vein 5 of the secondaries, which is here moderate and well removed from the median vein. From *sedata*, with which it agrees in structure, it differs by having much more white.

Acontia lucasi n. sp.

Head, collar and patagiæ white; disc of thorax gray. Abdomen with a slightly yellowish tinge. Primaries broadly white along the costal region to the middle of the subterminal space, where it is squarely cut off. The gray shade does not start quite at base in my single example, and I am a little in doubt whether this is due to an imperfection or whether there is a specialized, oval, transparent area below the median vein—I suspect the latter. From this point the gray shade extends solidly to the s. t. line and to the apex. Violet scales are intermixed in this darker portion of the wing. The t. p. line is brokenly marked by black interspaceal dots and scales. S. t. line marked by black scales in the apical dark region, then white, sinuate, cutting the terminal space and the fringe a little below the middle. A series of small black terminal spots. Orbicular a small gray excrescence from the dark into the white shade. Reniform an oval gray spot also joined inferiorly to the gray shading. Secondaries white, diaphanous, gray at apex and very narrowly so along outer border. Beneath, on primaries the maculation of the upper side is less contrastingly reproduced; the dark shades smoky, the lighter yellowish. Secondaries white.

Expands 26 mm. = 1.05 inches.

Hab.—Cape San Lucas, California.

One male received from Dr. Behr who has others; collected by Xantus de Besey. The species is interesting from all points, and especially by the (probable) secondary sexual character on the primaries. The white patagiæ in contrast to the gray disc should serve to differentiate it from its allies. The primaries are trigonate, of moderate length. Secondaries with vein 5 of moderate strength, arising from a short spur from the cross-vein. Veins 3 and 4 fork very little beyond the end of the cell.

Acontia biplaga Guenee.

1852. Gn., Spec. Gen., Noct., ii, 218, *Acontia*.

1857, Wlk., Cat. Brit. Mus., Het., xii, 785, *Acontia*.

1868, G. and R., Trans. Am. Ent. Soc., ii, 79, var. *aprica*.

1874, Grt., Bull. Buff. Soc. Nat. Sci., ii, 36, var. *aprica*.

Head dark gray; collar gray mottled; thorax else white or creamy; abdomen white or a little yellowish. Primaries dark gray or blackish, basal space more or less white mottled inferiorly, rarely almost all white, the t. a. line then forming an obliqne gray shade line followed by white. Normally the t. a. line is broken, white, often obsolete superiorly. A large, quadrate, costal white patch at about the middle of the wing inclosing the small, round, black orbicular. A smaller, also quadrate white patch at the inception of the reniform. T. p. line broken, black below the costal white patch, very deeply incurved below the cell. S. t. line incomplete, more or less white, preceded by irregular and sometimes prominent black spots, rather regularly and strongly trisinuate. A broken black terminal line. Fringes cut by a white patch at about the middle, but this is a variable feature and may be altogether absent. Reniform obscure, oval, partly outlined in black, in rare instances black filled. Secondaries white, becoming smoky outwardly, more broadly so in the female, with a smoky discal lunule. Beneath mainly white or yellowish, primaries blackish toward apex, relieving the subapical patch of upper side. Secondaries white, with a more or less obvious smoky outer border, a blackish discal mark and a black spot at apical third of costal margin.

Expands 25–29 mm. = 1.00–1.15 inches.

Hab.—Anglesea, New Jersey, September 4th (Smith); Hazleton, Pennsylvania, August (Dietz); Decatur, Illinois, July 1st–7th (Barnes); St. Louis, Missouri, October 31st (Riley); Poncha Springs, Colorado, July 14th (Oslar); Florida; Round Mountain (Hulst), Bastrop County (Meske), Texas.

Twelve examples representing both sexes. The localities above given are representative, and the insect occurs throughout the region east of the Rocky Mountains and south of New York, becoming more abundant in the West and Southwest.

The range of variation is not great and the species is, I doubt not, perfectly distinct from *aprica*. In *aprica* a large part of the median space is always white and the tendency is to darken the basal space. In *biplaga* the median space is always dark, except for the costal patches, and the tendency of variation is to lighten the basal space.

The primaries are moderate, trigonate, the apex a little marked, but scarcely pointed. Secondaries with vein 5 weaker than the others, on a short spur from the end of the cell. Veins 3 and 4 branch about one-third from the end of the cell.

Acontia aprica Hbn.

1803, Hbn., Schmett. Eur., Noct., f. 371, *Noctua.*
1818, Hbn., Verzeichniss, 261, *Tarache.*
1829, Steph., Ill. Brit. Ent. Haust., iii, 113, *Acontia.*
1852, Gn., Spec. Gen., Noct., ii, 219, *Acontia.*
1857, Wlk., Cat. Brit. Mus., Het., xii, 785, *Acontia.*
1868, H. Sch., Cuba, Corr.-Blatt, 1868, p. 10, *Acontia.*
1874, Morr., Proc. Bost. Soc. Nat. Hist., xvii, 212, *Tarache.*
1885, Gundlach, Cont. Ent. Cuba, 312, *Acontia.*

Head brown. Thorax and abdomen white or with a creamy tinge. Primaries white to just before the t. p. line; a gray or brown shade band preceding that line from the costa to the inner margin, though it may be broken just above the reniform. As a rule this band across the costal region cuts off a large, quadrate, white ante-apical spot. T. a. line marked by a blackish costal patch which rarely becomes a half band. Sometimes the basal space is gray mottled, and in one case a washed-out gray pervaded the entire space. T. p. line broken, black, deeply incurved below the cell, followed by blue or violet scales, which partly fill the s. t. space below the middle. Outwardly this space tends to become rusty brown or deep crimson. S. t. line very irregular, broken, whitish, preceded by broken black spots and followed in the narrow terminal space by shadings of brown, luteous and violet. A broken black terminal line. Orbicular a small black dot, sometimes hardly traceable. Secondaries white, with a mere trace of a smoky outer shading. Beneath, primaries yellowish or a little tawny, outer and apical region more or less smoky, the subapical white patch more yellowish. Secondaries white, a small smoky mark at costal two-thirds, and a small smoky discal spot.

Expands 22–28 mm. = .88–1.12 inches.

Hab.—Hazleton, Pennsylvania, August (Dietz); Central Missouri (Riley); Florida; New Mexico; Texas.

Has probably the same range as *biplaga*. Ten examples are before me, representing both sexes. There is really not much variation, and its general type has been referred to under the preceding species.

Wing form and venation are also practically like its ally, save that the branching of 3 and 4 takes place further beyond the end of the cell.

Acontia areli Streck.

1898, Strck., Lep. Het. et Het., Suppl. I, 11, *Acontia.*

Head chocolate-brown. Thorax white or creamy; abdomen white, or with a yellowish tinge. Primaries white or creamy to the middle of the median space, the line of separation on the whole parallel with the t. a. line. Basal line geminate, gray, obscure. T. a. line geminate, gray or olivaceous, not prominent, outwardly lunate to the median vein, inwardly lunate below. Above the median vein the gray-brown shading is not margined, below that vein it is edged with blackish, and in the submedian interspace, resting on the t. p. line, is an ovate patch of metallic blue scales. At the inception of the t. p. line is a quadrate white patch on the costa; below, the line is broken, black marked, deeply in-

curved below the cell. S. t. space more or less brown and violet shaded and mottled. S. t. line obscure, broken, yellowish, irregular, preceded by black scales. Terminal space largely bluish or violet, except at apex where it is ocherous brown. A row of black terminal lunules. The fringes are usually mottled with brown, gray and violet, and may or may not be cut with a whitish or yellowish shading at one-third from apex and at the same distance from hind angle. Orbicular an incomplete black ring. Reniform round, of good size, black ringed, metallic blue filled, centered by black. Secondaries soiled whitish or smoky, a little darker along the outer margin. Beneath, primaries tawny, varying in depth, the maculation of upper side obscurely indicated; secondaries whitish, with an obscure dusky lunule, and a dusky costal patch one-third from apex.

Expands 24–30 mm. = .96–1.20 inches.

Hab.—Santa Fé, New Mexico, July (Cockerell); Colorado; Glenwood Springs, Colorado, September (Barnes); Phoenix, Arizona (Barnes); Terloot, California (Behr); Pasadena, California (Smith).

Eight examples, representing both sexes. This species is well defined and varies little in the series from widely separated localities before me. The basal region has usually a yellowish or ocherous tinge; but the costal, ante-apical spot is always white. The round, large, blue filled reniform is further characteristic. The primaries are a little narrower at base and therefore more triangular than in *aprica*. Secondaries with vein 5 nearly as strong as the others, variable in point of origin. It may come directly out of the median at the end of the cell, or it may be on a short spur from the transverse vein, no two specimens being exactly alike in this matter. Veins 3 and 4 branch only a little beyond the end of the cell.

Acontia erastroides Guenee.

1852, Gn., Spec. Gen., Noct., ii, 218, *Acontia.*

1857, Wlk., Cat. Brit. Mus., Het., xii, 784, *Acontia.*

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, *Tarache.*

1881, Coquillet, Papilio, i, 8, larva.

1883, Coquillet, Papilio, iii, 84, larva on rag-weed.

Head brown; thorax and abdomen creamy white. Primaries creamy white from base to apex along costa and from base to median shade along the inner margin. Basal line more or less clearly marked as a dull smoky spot on costa. T. a. line smoky, single, outwardly oblique to the median vein, then nearly vertical and narrowed to the hind margin. Median shade starting as a luteous mark on costa, lost in the cell, but reappearing below it as a broad luteous brown band that reaches the t. p. line and forms the inner portion of the dark marking of the wing. T. p. line luteous on the costa, broken below it, forming a black curve well beyond reniform, then deeply incurved, black, more or less broken, sometimes a little diffuse, always rather prominent. The s. t. space is brown to the costal region, more or less black marked before the s. t. line, often with a violet shading. Terminal space pale luteous. S. t. line of the pale ground, irregularly

sinuate, preceded by black scales and marks. A series of black terminal marks, sometimes forming a line broken on the veins. Orbicular a black dot. Reniform upright, ovate, very obscurely defined, partly lost in the olivaceous luteous shading that extends through and beyond it to the t. p. line. Secondaries smoky, paler at base and with a yellowish tinge. Beneath, primaries blackish or smoky on disc, costal margin yellowish, others pale. Secondaries yellowish, with an obscurely marked outer line.

Expands 17–21 mm. = .68–.84 inches.

Hab.—Canada to Virginia, west to the Mississippi and beyond; Iowa. June to September.

This, next to *candefacta*, is the common eastern species, easily distinguished by the brown head and by the abbreviated dark outer markings. The primaries are proportionately short and broad, the apices and outer margin rounded. Secondaries with vein 5 weak, well removed from the median, out of the cross-vein. Veins 3 and 4 branch about one-third beyond the end of the cell.

Acontia quadriplaga n. sp.

Head and thorax white or a little creamy. Abdomen with a yellow tinge. Primaries smoky or leaden gray. Basal space more or less whitish and gray mottled; the curved, geminate t. a. line being more or less defined through the lower half of the wing. Two large, subquadrate white costal patches; one, a little within the middle, the largest, the other occupying the inner half of s. t. space at that point. Inferior half of median space more or less violet shaded and this tint extends into the s. t. space. T. p. line very imperfect, marked by fragmentary, black, interspaceal lines and dots. S. t. line slender, irregular, pale, more or less incomplete, usually preceded by carmine shadings. The upper half of the wing often with a luteous or olivaceous tinge. Terminal space unusually narrow, partly violet and brown mottled. A broken, black terminal line. Fringes gray, brown or violaceous, with or without a whitish shading at one-third from hind angle. Orbicular wanting. Reniform obscure, oval, laterally marked by blackish crescents. Secondaries yellowish, paler in the males, with a narrow dusky margin. Beneath yellowish, disc of primaries more or less blackish, the apical and usually also the median costal spots of upper side indicated; secondaries practically immaculate.

Expands 20–24 mm. = .80–.96 inches.

Hab.—Hot Springs, New Mexico, 7000 feet alt. (Hulst); Arizona; Texas.

Eight examples, of which only one is a male. There is little variation except in size and in the amount of pale basal shading. It is probable that this species has been confused with *aprica* and *biplaga*, than which it has broader, shorter primaries, lacking all trace of orbicular. The secondaries are distinctly yellowish, have vein 5 a little weaker, arising from a short spur from the median, and 3 and 4 branching only a short distance beyond the cell.

Acontia schwarzii n. sp.

Head, thorax and abdomen white. Primaries white and gray mottled in the basal space; the t. a. line white, indented in the submedian interspace, gray margined. Beyond this the white shade extends below the median vein, to the middle of the median space; above, it extends to the middle of the s. t. space where it is abruptly and squarely cut off. A gray cloud, indicating the median shade on the costa, tends to cut off a quadrate ante-apical patch. The inner portion of the gray shading tends to brown, a rather feebly defined band indicating the median shade. The s. t. line is traceable as a slender, irregularly denticulate blue line. Apex brown. S. t. line unusually close to the outer margin, marked by a few black and white scales toward apex; white and sinuate below middle. Fringes white, interlined with black toward apex. Orbicular wanting. Reniform an oval gray spot. Secondaries white, with a variably broad outer margin, darker in the female. Beneath, primaries black, margins narrowly white, fringes white. Secondaries white, with a narrow dark outer margin.

Expands 25–26 mm. = 1.00–1.05 inches.

Hab.—Catalina Spring, Arizona, July 24th (E. A. Schwarz); Phoenix, Arizona, January 15th (Dr. Griffith).

One male and one female are at hand and resemble each other generally. The variation is in the amount of the gray shading in the wings. The primaries are moderate or rather broad. Secondaries with vein 5 weaker than the others, from a spur at the end of the cell. Veins 3 and 4 branch just beyond the end of the cell.

Acontia arida n. sp.

Head and thorax white or creamy; abdomen a little yellow tinged. Primaries white or creamy from base to near the middle of median space, then obliquely curved toward costa to the middle of the median cell, thence outward, nearly parallel with the costa to the middle of the s. t. space and there abruptly terminating against the dark olivaceous apical space. The basal space is variably gray clouded. T. a. line gray marked on the costa, then by an incurved yellow crescent in the middle of the wing. The lower outer portion of median space, extending outward to s. t. line and curved upward toward apex, is leaden gray, yellow or olivaceous shaded outwardly, the apex brown tinged. A broad gray or olivaceous shade extends from costa above the reniform toward the gray portion of the median space, cutting off, in whole or in part, a quadrate white patch on the costa before the apex. T. p. line irregular, denticulate, blue, slender, more or less obviously geminate. S. t. space more or less brown tinged. S. t. line violet through apical patch, yellow or whitish and broadening inferiorly, inwardly and upwardly angulate opposite the hind angle so as to reach almost to the end of the median vein. The usual series of black terminal dots or marks is wanting, and there is a paler line not quite terminal. Fringes olivaceous or violaceous at hind angle and at apical third, else whitish or yellowish. Orbicular wanting. Reniform an obscure leaden gray, somewhat oval spot. Secondaries in the male soiled white, a little darker outwardly; in the female smoky, a little

paler toward base. Beneath, primaries yellowish, with the markings of upper side obscurely duplicated; secondaries whitish, with a feeble discal lunule.

Expands 21–23 mm. = .84–.92 inches.

Hab.—Glenwood Springs, Colorado, June and July (Barnes); Catalina Springs, Arizona, April 7th and 15th (Schwarz); Argus Mountains, Arizona, April (Koebele).

Ten males and two females, mostly in good condition. There is very little variation The amount of gray shading in the basal space differs, and the ante apical white patch on the costa may or may not be completely cut off; usually it is not. But these differences do not change the characteristic appearance of this, one of the most distinct species in the genus.

The primaries are trigonate and rather short. Secondaries with 5 distinctly less developed than the others, from a short spur from the median. Veins 3 and 4 vary in their point of furcation from near the end of the cell to beyond one-third to the outer margin.

Acontia coquillettii n. sp.

Head, thorax and abdomen white, with a slight creamy tinge. Primaries creamy white from base to near the t. p. line on inner margin, and almost to s. t. line on the costa. T. a. line marked by geminate gray costal clouds and by a gray blotch in the cell. Median shade marked by a gray costal blotch. T. p. line obsolete, except through the dusky space below vein 3 and there whitish, linear, denticulate. This dusky shade extends along the inner margin a little before the t. p. line to the s. t. line, then upward, rather abruptly rounded off at about vein 3. A yellow shading, a little re-inforced by a gray patch, connects this through s. t. space with the dark apical patch. S. t. line narrow, thread like and whitish through apical patch, where it is margined and emphasized by black and metallic-blue scales, then lost in the pale terminal space. Terminal space gray mottled. A gray, preceded by a yellowish terminal line. Fringes creamy white, with a gray interline above the middle. Orbicular wanting. Reniform a yellow, oval spot, which is not outlined and not relieved. Secondaries smoky or blackish, with white fringes. Beneath, primaries blackish, with an ante-apical yellowish blotch and whitish fringes. Secondaries whitish at base, blackish exteriorly. An outer smoky line is indicated on the costa.

Expands 25 mm. = 1. inch.

Hab.—Los Angeles Co., California (Coquillett).

A single female example only, lacking part of the abdomen. The blackish secondaries and practical lack of the ordinary spots make this an easily distinguishable form. The primaries are like those of *candefacta* in form, and, indeed, resemble it in general pattern of maculation. The secondaries have vein 5 nearly as strong as the others, arising from a spur from the median; 3 and 4 branched at or very little beyond the end of the cell.

Acontia neocula n. sp.

Head, thorax and abdomen white, the latter sometimes with a yellowish tinge. Primaries white from base to an outer, olivaceous gray shade, which begins just within the t. p. line and is outwardly sinuate and narrowed to the costa just within the s. t. line. This white space is unbroken, except for a gray costal cloud at base and over the end of the cell, indicated in three of the eight examples before me. A vague yellowish shading indicates the reniform. There is a quadrate yellowish or olivaceous patch beyond the cell, not very clearly marked, invading the gray space for half its own width. T. p. line indicated as an irregular, pale, slender line near the hind margin. S. t. line slender, white, irregular, very close to outer margin. Terminal space shaded with violaceous. A gray, preceded by a pale, terminal line. Fringes white except at apex. Orbicular absent. Reniform traceable only as already stated. Secondaries white, with a narrow, smoky, outer margin, running out at anal angle. Beneath, primaries white basally, smoky over the dusky shading on the upper surface. Secondaries white.

Expands 19–25 mm. = .76–1.00 inches.

Hab.—Hot Springs, New Mexico, 7000 ft. (Hulst); Texas.

Five males and three females, all very much alike. This is usually confused with *cretata*, and it is not impossible that it is a form of that species only. The main distinctive characters are smaller average size, much narrower outer dusky band and almost entire absence of costal shading. The primaries are like those of *cretata*. In the secondaries 3 and 4 fork at the end of the cell, 5 is decidedly weaker than the others and arises from a spur from one-fourth to one-third of the cell width from the median vein.

Acontia cretata Grote and Robinson.

1868, G. and R., Trans. Am. Ent. Soc., iii, 181, pl. ii, f. 78, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head, thorax and abdomen white, the latter sometimes with a yellowish tinge. Primaries white from base to middle of median space, upcurved to the cell, forming there a step or jog, above which the reniform is traceable, crossing the cell space on the t. p. line, then again forming a step half way across s. t. space and terminating squarely. The costal portion of basal space is gray mottled, relieving the t. a. line, which is traceable half way across the wing in all but two of my specimens. Another gray cloud is at the inception of the median shade, and this often extends so as to almost meet the outer gray space. Sometimes the costa is gray to the inception of the t. p. line. Orbicular wanting. Reniform indicated in all examples by the notching of the outer dark space and in some specimens traceable in gray. The median shade line is marked as a curved darker line through the gray outer shading, and within this the shading is more olivaceous or even yellowish. T. p. line slender, blue, very irregular and below the middle with acute outward venular teeth. S. t. line very irregular, white, slender, at the apex marked with metallic-blue scales; the apical space itself usually golden brown tinged. Terminal space very narrow, more or less violaceous. A terminal gray, preceded by a white line. Fringes mostly white, except toward apex.

Secondaries white, with an outer smoky margin, which runs out at anal angle. Beneath, primaries smoky, tending to yellowish at base; secondaries whitish.

Expands 21–26 mm. =.84–1.05 inches.

Hab.—Colorado; Bluff, Utah; Texas in May.

Three males and seven females are at hand and I have seen many others. The primaries are moderate in length, proportionally rather broad, trigonate. The secondaries are as in *neocula* as to venation.

The general range of variation has been fairly stated in the description, and it consists chiefly in the amount of gray shading along the costal region toward base. We have in this species a decided indication of the reniform spot, and in the square termination of the white space on the costa, a decided tendency toward a square subapical patch, which is further intensified by the gray shading from costa, which, in one example, all but cuts off such a spot.

Acontia behrii n. sp.

Head and thorax white; abdomen with a slightly yellowish tings. Primaries white from base to the middle on the inner margin to a brown shade, which is sharply defined and extends obliquely outward to the outer median vein, is there squarely upright to the upper angle of cell, and then forms an abrupt step which extends nearly to the s. t. line. The white shade here forms an outward tooth, and is then oblique to the costa at middle of s. t. space. Basal line indicated by geminate gray costal clouds. T. a. line geminate, gray, complete in the specimen before me. A gray cloud indicates the beginning of the t. p. line. The outer dusky shade is mostly dull brown to the s. t. line. The median shade line is blackish and extends from vein 3 to the inner margin. S. t. line a slender, zigzaged blue line, partly preceded and partly followed by a darker, umber-brown shade. A black dot follows it opposite the hind angle. Terminal space mostly blue, white from a little over middle to near the inner angle. S. t. line irregular, narrow, incomplete, whitish. Fringes steel-gray or bluish at apex and inner angle, else whitish. A slender, broken, black terminal line. Neither orbicular nor reniform marked in the specimen. Secondaries white, with a bluish reflection and a smoky outer margin, widest at apex. Beneath, primaries smoky, tawny toward base and along costa; secondaries white.

Expands 25 mm. = 1. inch.

Hab.—California.

A single male example given me by Dr. Behr who had others. I do not recollect, if I was told, from what especial region this came. At all events the species is a very good one, differing from its immediate allies in the much sharper maculation, which is not smooth or glossy gray and is without olivaceous shading.

The primaries are a little broader than in *cretata* and compara-

tively shorter. In the secondaries the venation is like *cretata*, save that vein 5 is a little nearer the branching of 3 and 4, which is at the end of the cell.

Acontia elegantula Harvey.

1876, Harv., Can. Ent., viii, 55, *Thalpochares.*
1880, Grt., Can. Ent., xi, 58, *Thalpochares.*
1882, Grt., New List, 37, *Tarache.*
1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia.*
semiopaca Grote.
1878, Grt., Bull. Geol. Surv., iv, 182, *Tarache.*
1882, Grt., New List, 37, pr. syn.
arizonæ Hy. Edwards.
1878, Hy. Edw., Pacific Coast Lep., No. 29, 7, *Thalpochares.*
1880, Grt., Can. Ent., xii, 58, *Thalpochares.*
1882, Grt., New List, 37, *Tarache.*
1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia.*
seminivealis Hulst.
1886, Hulst, Trans. Am. Ent. Soc., xiii, 157, *Orobæna.*
1893, Smith, Bull. 44, U. S. Nat. Mus., 300, pr. syn.

Head, thorax and abdomen white or creamy. Primaries white or creamy from base to the upright luteous brown median shade, and beyond the wing is luteous, varying to gray. S. t. line marked by a pale cloud on the costa and more or less obscurely traceable as a sinuate, broken pale line. S. t. line whitish, a little sinuate, rarely complete, sometimes marked only at the costa and on inner margin. A series of small terminal lunules. Orbicular wanting. Reniform round, gray, narrowly annulate with pale. Secondaries white or nearly so, iridescent, a little smoky outwardly. Beneath, primaries yellowish, outer half a little darker; secondaries white.

Expands 17-22 mm. = .68-.88 inches.

Hab.—Montana, June; Nevada; Colorado; Phoenix, Arizona, March 12th (Griffith); Argus Mountains, April (Koebele); Hot Springs, New Mexico, 7000 ft. (Hulst); California.

Three males and nine females before me. The species ranges considerably in size, and it is the smaller form that Edwards considered as distinct under the name *arizonæ*. This is also the same as Hulst's *seminivealis*.

Aside from this, there is not very much real variation. The outer darker space differs a little in ground color, and the t. p. and s. t. lines are more or less incomplete; but none of these affects the general appearance of the species.

As a matter of fact this species is better referred to *Thalpochares*, because, in all the specimens examined, the accessory cell of primaries is wanting. Of course, this occurs—exceptionally—in other species, but it seems here to be the rule. As Mr. Grote has referred

it to *Acontia*, and as it really resembles these species closely, it may be left here for the present until a generic revision of the whole group is made. The secondaries have 5 very weak, scarcely more than a fold, from the cross-vein near the middle of cell, 3 and 4 together out of the median at the end of the cell.

Acontia virginalis Grote.

1881. Grt., Can. Ent., xiii, 151, var. *binocula*.

1881, Grt., Papilio, i, 155, ? var. *binocula*.

Head and thorax white; abdomen with a faint yellowish tinge. Primaries creamy white, except for a yellow median shade band and a yellow and smoky band curved from outer third of inner margin to the apex. The yellow median band is at almost the middle of the wing, tends to become darker inferiorly and forms the inner margin of the dusky shading. This fills the space to the t. p. line, curving up to and beyond the reniform, then extended as a more yellow cloud to the gray apex. Above the reniform the costa is creamy, but tends to yellow cloudings. At apex there is a gray shade, through which the pale s. t. line becomes visible; toward middle the s t. and terminal spaces become creamy, with a variably deep yellow tinge. A series of very small black terminal dots. Fringes whitish except at apex. Orbicular wanting. Reniform round, leaden gray, annulate with white. Secondaries white, with a smoky outer border, lost before reaching the anal angle. Beneath, primaries smoky on disc, costal margin yellowish, fringes and inner margin white. Secondaries white.

Expands 23–25 mm. = .92–1.00 inches.

Hab.—Denver, Colorado; Arizona.

Two males and two females. Except for a little difference in the intensity of the yellow or gray shading there is no variation. The gray tends to disappear, leaving the yellow dominant, and altogether this is the palest species of its type. It was originally described as a variety of *binocula*, but later in the same year Mr. Grote suggested the question: "Is it a variety?". From the material at hand I think it is a good species, distinguished from *binocula* as noted in the synoptic table and elsewhere.

The secondaries have vein 5 very weak, from the cross-vein well toward its middle. It is a typical 3-fid. The median forks into 3 and 4 well beyond the end of the cell.

Acontia binocula Grote.

1875, Grt., Can. Ent., vii, 224, *Tarache*.

1893, Smith, Bull. 44, U. S. Nat. Mus., 300, *Acontia*.

Head thorax and abdomen white, the latter often with a yellowish tinge. Primaries white or creamy to a broad yellow or olivaceous median band, which, from the middle of the cell, forms the anterior border of a gray shade, which fills all the space below the reniform to the s. t. line and is continued beyond reniform obliquely to the apex. Terminal space usually white shaded below the apical region, but there is always a gray underlay which sometimes darkens it to the

margin. A series of black terminal dots. Fringes white or gray. The t. p. line is usually traceable by pale scales and by a leaden or violet gray shading which forms the middle of the dark space toward the inner margin. Orbicular wanting. Reniform round or nearly so, gray, annulate with pale. Secondaries white, with a narrow smoky outer border, which is lost before reaching the inner angle. Beneath, primaries smoky, yellowish along the costal edge, white on fringes and along inner margin. Secondaries white.

Expands 18–27 mm. = .72–1.08 inches.

Hab.—Texas in May; Arizona; Colorado, June 28th (Wheeler Survey); Poncha Springs, Colorado, July 14th (Oslar); Black Hills, Montana (Hulst); Kansas in July.

Two males and five females. Though my largest example exceeds any *virginalis* before me, yet the latter is, on the whole, the larger species and looks it. *Binocula* is much darker as a whole and lacks the distinctive yellow appearance of *virginalis*. Smaller examples are much like *candefacta*, save that they always lack the orbicular.

In venation the secondaries are like *virginalis*, save that 3 and 4 branch further beyond the cell.

Acontia meskei n. sp.

Head, thorax and abdomen creamy white. Primaries creamy white to the middle of wing along inner margin and above the median vein nearly to the s. t. line. Basal line marked on the costa. T. a. line marked by a black costal patch, else lost. The t. p. line also begins on a larger or smaller dark costal patch, is a broken upright blackish line far beyond cell, and a series of upright interspaceal black marks below the reniform to the inner margin. Median shade marked by a brown band just before the t. p. line below the median vein. Beyond this portion of the t. p. line is a violet shade to the s. t. line. S. t. line creamy, irregular, broken, preceded by golden brown shades, and in the apical region by black spots. Terminal space broken, with brown, creamy and violet shadings. A broken blackish terminal line. Orbicular a small black dot. Reniform obscurely indicated only by scattered brown scales. Secondaries with a yellowish tinge, a little smoky outwardly. Beneath, primaries yellowish, with a dusky discal spot, and angulated, broken exterior line, a dark apex and smoky blocked fringes. Secondaries yellowish, with a dusky discal mark, a smoky patch on the costa giving rise to a slender line, which gets less than half way across the wing, and a narrow blackish outer border.

Expands 20–22 mm. = .80–.88 inches.

Hab.—Texas.

Two males from the old Meske collection, probably taken by Boll. The species is quite characteristic and not easily confused with any of its allies. The primaries are rather narrow for their length, a little subparallel. The secondaries have vein 5 weak, from the cross-vein at some distance from the median; 3 and 4 branch well beyond the end of the cell.

Acontia tennicola Morrison.

1874, Morr., Proc. Bost. Soc. N. H., xvii, 218, *Tarache.*

1893, Smith, Bull. 44, U. S. Nat. Mus., 299, *Acontia.*

Head and thorax white or creamy. Abdomen a little gray, with narrow white rings faintly indicated in the female. Primaries white at base, above the median vein extending to the s. t. line; below the vein extending to the middle of the median space in the male to the t. a. line only in the female. Basal line indicated on costa. T. a. line marked on the costa, and in the female defined below the median vein by the gray portion of the wing, in the male the line is more or less indicated by gray shadings. Basal space otherwise also gray clouded in some examples. Outer part of wing luteous brown in the median space, more or less violaceous in the s. t. space; luteous brown in the terminal space. Median shade marked on the costa and again below median vein, where in the male it forms the inner border of the dark part of the wing. T. p. line dusky on the costa, then whitish, narrow, irregular, often in great part obsolete. S. t. line whitish, irregularly sinuated and toothed, preceded by brown shadings below the apex and again at about the middle. Terminal space brown. A series of small black terminal lunules. Fringes brown, cut with white at the middle. Orbicular a black dot, always distinct in the female, tending to disappear in the male. Reniform small, round, a black or brown ring, white or yellow center. Secondaries white in the male, with a narrow smoky outer border. Yellowish in the female, with a much broader smoky outer shading. Beneath, primaries blackish, with a yellowish streak in the cell, and a subapical mark on costa. Secondaries whitish, with a narrow smoky outer border and a smoky spot on costa toward apex.

Expands 17–20 mm. = .68–.80 inches.

Hab.—Texas in April; Hot Springs, New Mexico, 7000 feet (Hulst); Las Cruces, New Mexico, May 8th (Townsend).

Four males and eight females, the difference in maculation constant between the sexes. In all the females the dark shade begins at the t. a. line below the cell; in none of the males does it begin before the median shade. In the males the orbicular becomes much reduced, and in two examples is entirely wanting.

As for the rest, the variation is chiefly in the amount of gray shading in the basal space and along the costa. There is also a difference in the s. t. and terminal spaces, which tends to become mottled.

The primaries are a little narrower than usual, tending to subparallel. Secondaries with 5 weak, well removed from the median, out of the cross vein, a real trifid; 3 and 4 branch well beyond the end of the cell.

Acontia libedis n. sp.

Head and thorax creamy white; abdomen white or faintly yellow tinged. Primaries yellowish or creamy, the terminal space mostly gray, a large quadrate gray and brown patch a little beyond the middle on the inner margin. This patch extends from the median shade to the t. p. line, and from the inner mar-

gin to the median vein. Basal line feebly indicated on the costa. T. a. line olive-gray or luteous, outcurved or angulated, single, usually complete and sometimes a little expanded on the inner margin. The basal space may be more or less gray clouded. Median shade line luteous or olivaceous on costa, outwardly oblique to the median vein, there angulated and inward to inner margin within the middle, there brown or black, edging the dusky patch already limited. Beyond this shade the wing in one specimen is all obscured with olivaceous. T. p. line luteous, narrow, single, outcurved over the cell, rather evenly incurved below. Preceding this line the quadrate patch on inner margin tends to a violet shading. The s. t. space is shaded with luteous or olivaceous. S. t. line pale, irregular, close to outer margin an outward tooth cutting the terminal space below the apex. A broken black terminal line preceded by a paler line. Fringes gray or brown, cut with yellowish at apex and about middle. Orbicular a small black dot. Reniform moderate in size, a gray or brown ring with a pale centre. Secondaries white or with a faint smoky tinge, and with a very narrow outer border. Beneath, primaries yellowish, with disc more or less smoky; secondaries white or faintly yellow tinged, immaculate.

Expands 18–21 mm. = .72–.84 inches.

Hab.—Denver, Colorado, August 11th (Oslar); Hot Springs, New Mexico, 7000 ft. (Hulst); Texas in April.

Five males and three females. Of these, one pair from Colorado is fresh and in good condition; the others are flown and more or less imperfect, so that I hesitated at first to consider them identical. There is no reasonable doubt, however, though it may be that Texan examples are on the whole a little paler than those from Colorado. The single New Mexican example is intermediate. The variation is in the intensity of the dusky shading, and fresh examples will probably seem darker because the dark scales overlay the yellow or creamy base.

The primaries are rather narrow and elongate, subparallel. In the secondaries, vein 5 is scarcely more than a mere fold, from the cross-vein well removed from the median. It is therefore a good trifid. Veins 3 and 4 do not separate until near or even beyond the middle of their course.

Acontia neomexicana n. sp.

Head and thorax white. Primaries creamy white, broken mainly by a gray shade curving from inner margin beyond the middle to the apex, interrupted above the cell. A yellow t. a. line is faintly indicated. Median shade yellow, outwardly oblique from the costa to the median vein, there bent and inwardly oblique to the inner margin, forming the inner border of the gray shade. This shade on the inner margin extends to the s. t. line, but narrows until, just below the reniform, it does not extend beyond the t. p. line. Beyond the reniform is a gray and yellow patch marking the t. p. line, and beyond this a paler gray shade extends to the apex. T. p. line through the dark portion is narrow, irregular,

violaceous, a tint which obtains also in the lower portion of s. t. space. Remainder of s. t. space yellow tinged, except at apex. S. t. line whitish, quite broad, irregular. Terminal space pale gray. A series of black terminal dots. Orbicular a small black dot. Reniform round, gray, pale centered. Secondaries white, with a narrow smoky outer border. Beneath, primaries smoky, overlaid by yellow, glistening; secondaries white, broadly yellow along costal margin.

Expands 20 mm. = .80 inches.

Hab.—Texas, July 23rd (Belfrage).

A single male only. The species looks like a much reduced *virginalis* with an orbicular dot. It also resemble *libedis*, but the dark shading is not so abruptly cut, and though interrupted it extends to the apex. Primaries a little narrower than *candefacta*, than which species this is much paler. Secondaries with vein 5 weak, from the cross-vein well removed from the median. Veins 3 and 4 branch at about one third beyond the cell.

Acontia candefacta Hubner.

1823, Hbn., Zutraege, iii, ff, 587, 588, *Tarache.*

1852, Gn., Spec. Gen., Noct., ii, 216, *Acontia.*

1857, Wlk., Cat. Brit. Mus., Het., xii, 784, *Acontia.*

1880, Grt., Can. Ent., xii, 118, *Tarache.*

1883, Coquillett, Papilio, iii, 84, larva.

debilis Wlk.

1857, Wlk., Cat. Brit. Mus., Het., xii, 786, *Acontia.*

1868, G. and R., Trans. Am. Ent. Soc., ii, 78, pr. syn.

Head, thorax and abdomen white or with a creamy tint. Primaries white or creamy to the median shade, beyond which the wing is mostly leaden gray, varied with yellow or olivaceous. There is a leaden gray spot on the cell near the base, which may be absent or may expand into a shading that clouds most of the basal space. T. a. line usually marked on the costa by a gray spot, sometimes forming an outcurved band across the wing, more usually defined below the cell only. Median shade band-like, oblique from costa to the median vein, there bent or curved inwardly to form the inner margin of the gray outer portion. In color it is yellow, luteous, olivaceous or gray, and it is rarely complete across the cell. It may be only a costal patch, and between that and a complete bar all intergrades occur. The dark space on the inner margin extends from median shade to subterminal line usually includes the reniform and curves beyond it to the apex, the s. t. space being all gray. T. p. line very irregular, bluish, slender, often wanting, sometimes merged into a bluish shading. S. t. line whitish, broad, prominent, irregular, cutting the terminal space below the apex. Terminal space narrow, largely white or white mottled, except at apex. A series of black, somewhat lunate terminal spots. Fringes long, usually gray, generally cut with white at or a little below the middle. Orbicular a small black dot, occasionally obsolete in the male. Reniform moderate in size, solid gray, annulate with whitish. Secondaries soiled whitish to smoky, darker outwardly, fringes white. Beneath, primaries smoky or blackish, the margins paler; secondaries whitish.

Expands 18–21 mm. = .72–.84 inches.

Hab.—United States and Canada east of the Rocky Mountains, taken from May to September in the northern part of its range, March and April in Texas and Florida.

Walker cites in the synonymy *Phytometra minuta* Haw., Lep. Britt., 265, with what justice I do not know.

This species is by all odds the most common representative of the genus as well as the most widely distributed. In the large series before me little real variation occurs. The contrasts may be all sharply defined, there may be a black shade in the darker part of the wing, or everything may run toward olivaceous or yellowish. Yet the characteristic appearance of the species is not changed.

The primarles are moderate in length, trigonate, the apices well marked. In the secondaries vein 5 is weak, and from the cross-vein well removed from the median. Veins 3 and 4 separate at varying distances beyond the cell, averaging about one-third of the way to outer margin.

Acontia ardoris Hubner.

1823, Hbn., Zutraege, Samml. Ex. Schmett., iii, 34, ff. 551, 552, *Tarache.*

1852, Gn., Spec. Gen., Noct., ii, 216, *Acontia.*

1857, Wlk., Cat. Brit. Mus., Het., xii, 758, *Acontia.*

1880, Grt., Can. Ent., xii, 118, *Tarache*, ? an American.

Size and appearance of *candefacta*, of which it is a near neighbor. Primaries of a yellowish white, with a basal spot, a subterminal half line and the middle below the cell leaden gray. The latter space traversed by undulated deeper lines and surmounted by a yellow or olive tint that forms a band anteriorly, and circumscribes a semicircular costal space of the ground color, in which are two black punctiform spots, of which the first is often the only one visible. At the apex this shade is tinted with red-brown. Fringe white above, leaden inferiorly. Secondaries yellowish white, uniform, similar in both sexes. Beneath, primaries tinged with reddish, the marks showing through.

The above is a free translation of Guenée's description of South American examples, and he remarks that he has not seen Georgian specimens.

I saw these examples at Paris and noted them as having the maculation of *candefacta*, but a darker color and narrower wings.

LIST OF THE SPECIES.

TORNACONTIA Smith.

T. sutrix *Grt.*

T. megocula *Smith.*

CONACONTIA Smith.

C. flavicosta *Smith.*

C. angustipennis *Grt.*

ACONTIA Ochs.

A. terminimaculata *Grt.*
A. delecta *Wlk.*
metallica Grt.
A. flavipennis *Grt.*
A. abdominalis *Grt.*
A. lactipennis *Harv.*
A. major *Smith.*
A. expolita *Grt.*
A. lanceolata *Grt.*
A. gonella *Strck.*
A. sedata *Hy. Edw.*
A. nuicola *Smith.*
A. lucasi *Smith.*
A. biplaga *Gn.*
A. aprica *Gn.*
A. areli *Strck.*
A. erastroides *Gn.*
A. quadriplaga *Smith.*
A. schwarzii *Smith.*
A. arida *Smith.*
A. coquillettii *Smith.*
A. neocula *Smith.*
A. cretata *G.* and *R.*
A. behrii *Smith.*
A. elegantula *Harv.*
semiopaca Grt.
arizonæ Hy. Edw.
seminivealis Hulst.
A. virginalis *Grt.*
A. binocula *Grt.*
A. meskei *Smith.*
A. tenuicola *Morr.*
A. libedis *Smith.*
A. neomexicana *Smith.*
A. candefacta *Hbn.*
debilis Wlk.
A. ardoris *Hbn.*

NOTES ON MEXICAN ORTHOPTERA, WITH DESCRIPTIONS OF NEW SPECIES.

BY JAMES A. G. REHN.

The following notes are the results of the study of a collection of Mexican Orthoptera collected by Mr. Otis W. Barrett, of Tacubaya, Mexico. All the material was collected rather recently, and represented localities in the states of Guerrero, Vera Cruz, Morelos, Tamaulipas and the Federal District of Mexico (D. F.). Material for comparison is rather scarce, and all the forms described as new show differences which markedly distinguish them from the descriptions or plates of their nearest allies. The number of specimens is one hundred, of about thirty-nine species. The types are in the private collection of the writer.

Mr. August Busck, of the U. S. Department of Agriculture, rendered the writer assistance on several occasions, for which I desire to express my earnest thanks.

Family FORFICULIDÆ.

Apterygida tæniata Dohrn.

1862, *Forficula tæniata* Dohrn., Stett. Ent. Zeit., xxiii, p. 230.

One female; Cuernavaca, Morelos, vi.

Family BLATTIDÆ.

Homœogamia mexicana Burmeister.

1839, *Homœogamia mexicana* Burmeister, Handb., ii, p. 490.

One specimen; Jalapa, Vera Cruz, viii, ♂.

Family MANTIDÆ.

Stagmomantis limbata Hahn.

1835, *Mantis limbata* Hahr, Icones ad Mon. Cimic., i, t. A. f. 2.

One female; Cuernavaca, Morelos, vi, 1899.

This specimen is colored similar to the one described by Burmeister (Handb., ii, p. 532) as *Mantis viridimargo*, which is considered by Saussure and Zehntner a synonym of the above.

Vates annectens n. sp.

Types: ♂ and ♀; Tacubaya, D. F., x, xi, 1899.

These specimens belong to a species which might be regarded as an intermediate between *tolteca* and *paraensis*, combining characters of both, with some peculiarly its own.

It differs from both in the greater width across the coxal lobes; from *tolteca* in the comparative narrowness of the median and posterior sections of the prothorax, in the form and arrangement of the foliaceous lobes of the second and third femora and tibiæ, and in the general greenish color of the elytra; from *paraensis* (♀) in the form of the elytra (thus agreeing with *tolteca*), in the comparatively small size of the frontal processes (like *tolteca*) and the reduced size of the spines on the prothorax.

♂.—Form rather slender and graceful. Frontal processes rather short, decidedly conical. Antennæ pectinate. Pronotum slender, the shaft remarkably so and triangular in section; the collar rather broad, coxal lobes decidedly so; the shaft sharply keeled, obscurely sulcate, moderately spined. Elytra long and narrow, marginal field moderately developed anteriorly. Median femora and tibiæ with the foliaceous lobes developed, one on the femora posteriorly, two on the tibiæ (anteriorly and posteriorly), those on the femora very angular. Posterior femora each with a trace of an anterior lobe, the posterior one somewhat rounded; tibiæ with an elongated lobe on the external margin. General color of head, pronotum and limbs blackish brown; the anterior pair of limbs dusted with ashy, median and posterior pair each with a single band of ochre. Beneath light brownish; the inner side of the anterior femora pale yellowish. Abdomen rich glossy blackish brown, with marginal patches of ochraceous. Elytra greenish; the marginal field almost opaque, the color rich; discoidal field semi-hyaline, the color faint, with a large central brownish blotch flanked anteriorly and posteriorly by two smaller ones, besides a few irregular spots scattered near the tip. Wings hyaline, infuscated at the tip with a few small irregular blotches scattered over the anterior portion.

♀.—Form moderately heavy. Frontal processes as in the male. Pronotum as in the male, but with a greater width to the shaft. Elytra with the marginal field sharply rounded, making it only three-fourths the length of the discoidal area. Abdomen depressed. Posterior femora with the anterior lobe much elongated, having a length of about four millimeters. General color of the head, pronotum and limbs soiled sienna. Head and pronotum lined and shaded with umber. Elytra opaque pea-green, richest on the marginal area, the discoidal with two large blotches of reddish brown, several small spots of the same irregularly scattered over the posterior portion; the internal fold of the posterior margin blackish brown. Wings smoked with blackish purple, the cross-veins white; tips of the wings tinged with sepia; the anterior border ochraceous. Abdomen glossy brownish black; below dull black, with the tip orange. Femora and tibiæ banded with clear ochraceous, richest on the anterior pair of limbs, rather obscure on the posterior pair.

Measurements:	♂	♀
Total length	58 mm.	56 mm.
Pronotum	21 mm.	21 mm.
Elytra	52 mm.	32 mm.

In 1838 the genus *Vates* was described by Burmeister (Handb., ii, Bd., ii, Abth., p. 543). The type of this genus, as mentioned by Saussure and Zehntner is *Vates cnemidotus* Burmeister, which is a synonym of *Mantis subfoliata* Stoll. In 1839 the genus *Theoclytes* was described by Serville (Orth., p. 151), and he placed three species under it, the first one (which was the only one he was positive belonged there) being *foliata* Lichtenstein. This name is a direct synonym of *subfoliata* Stoll, as Lichtenstein refers to the latter's plate and figure, apparently ignorant of the fact that a name had been based on the same. Accordingly, *Theoclytes* is a direct synonym of *Vates*.

Family PHASMIDÆ.

Bacteria tridens Burmeister.

1839, *Bacteria tridens* Burmeister, Handb. d. Ent., ii, p. 567.

Three specimens; two males, Cuernavaca, Morelos, ix, 1898, Iguala, Guerrero, ix, 1898; one female, Cuernavaca, Morelos, ix, 1898.

The males are perfectly typical specimens exhibiting the specific characters to perfection. Westwood (Cat. Phasm., p. 27) states that he received a female with a male of this species which he described, and he asserts it was very similar to the female of *B. striata*, which I doubt, as the female of that species never has the head and thorax granulate.* The distinctive features of species of this group are generally more pronounced in the female, and the males of *tridens* have very appreciable granulations on the dorsal surface.

A short description of the female in the collection might not be out of place.

Head and thorax rather coarsely granulate, resolving into four parallel lines on the posterior part of the head. Abdomen with tip attenuate, the whole striate, five lines being visible from above, the central one becoming obsolete on the fifth segment. Anterior femora with dorsal, ventral and lateral ridges very well developed for a space of about two-thirds the entire length. Antennæ reaching to the second abdominal segment, possibly further, as they appear slightly damaged.

Length body	71 mm.
Length anterior femora	18 mm.
Length mesothorax	16 mm.
Length metathorax	12 mm.

* To my mind Westwood's female *tridens* was simply a specimen of *striata* collected at the same time as his male *tridens*.

Family GRYLLIDÆ.

Œcanthus niveus De Geer.

1773, *Gryllus niveus* De Geer, Mém. Ins., iii, p. 522, t. 43, f. 6.

Two specimens; both females, Cuernavaca, Morelos, vi.

Family LOCUSTIDÆ.

Stenopelmatus talpa Burmeister.

1839, *Stenopelmatus talpa* Burmeister, Handb. d. Ent., ii, p. 721.

One specimen; female, Tacubaya, D. F., x.

Dichopetala mexicana Brunner.

1878, *Dichopetela mexicana* Brunner, Monog. der Phaneropt., p. 77.

One specimen; female, Rio Cocula, Guerrero, 5–12–'98.

Scudderia mexicana Saussure.

1861, *Phaneroptera mexicana* Saussure, Rev. et Mag. Zool. (2), xiii, p. 129.

Two specimens; both females, Cuernavaca, Morelos, 9–11–'98, Rio Cocula, Guerrero, xi, '98.

These specimens are rather doubtfully referred to this species, as females of this genus are rather hard to determine without accompanying males.

Phrixa nasuta Stal.

1874, *Phrixa nasuta* Stal, Recensio Orthopterorum, ii, p. 36.

One male; Orizaba, Vera Cruz, vi.

This exhibits the development of the vertex, and the form of the cerci also agrees closely with Brunner's generic diagnosis of those parts of the male.

Stilpnochlora azteca Saussure.

1859, *Phylloptera azteca* Saussure, Revue et Magasin de Zoologie (2), xi, p. 203.

Five specimens; Jalapa, Vera Cruz, iv, v, vi. Four females, one male.

The measurements of them are as follows:

	Total length (head to end of wing).	Hind tibia.
♂	77 mm.	39 mm.
♀	86 mm.	40 mm.
♀	92 mm.	40 mm.
♀	91 mm.	39 mm.
♀	89 mm.	41 mm.

Conocephalus hebes Scudder.

1879, *Conocephalus hebes* Scudder, Proc. Bost. Soc. Nat. Hist., xx, p. 92.

One specimen; male, Cuernavaca, Morelos, vi.

This name was doubtfully placed under *obscurellus* Redtenbacher by Saussure, but why is not plain, as my Mexican specimen perfectly agrees with the description of Scudder's *hebes*.

Xiphidium ictum Scudder.

1875, *Xiphidium ictum* Scudder, Proc. Bost. Soc. Nat. Hist., xvii, p. 461.

One specimen; male, Cuernavaca, Morelos, vi.

This specimen agrees very well with Scudder's description, except the frontal constriction of the vertex is more decided than in the specimens he described.

Capnobotes imperfectus n. sp.

Types: three males, Rio Cocula, Guerrero, xii, 1898.

This species differs from all the known representatives of the genus in the abbreviated elytra, and in the processes of the meso and metasternum being decidedly spinous. The nearest ally that I can see is *fuliginosus* Thomas, but it differs decidedly from that, probably representing a new subgenus.

Size medium; vertex full and swollen; eyes round and somewhat prominent; frontal process moderately produced, sulcate; antennæ over twice as long as the body. Pronotum abruptly elevated posteriorly, the anterior border slightly so, the outline viewed laterally being rather saddle shaped: anterior and posterior margins almost straight, slightly indented centrally; lateral lobes fairly deep anteriorly, deepest on the line of the anterior coxæ, thence broadly trimmed to the posterior margin; lateral and median carinæ faintly marked posteriorly Elytra reaching only to the fifth abdominal segment, broadly rounded, lateral portion sharply deflected. Processes of the meso and metasternum nearly as completely spinous as those of the prosternum. Anterior femora inferiorly with two rows of rather obsolete spines; tibiæ with six large spines. Median femora the same; tibiæ with four rows of spines, the superior ones imperfect and irregular. Posterior femora very smooth, two rows of rather obsolete spines inferiorly; tibiæ above smooth anteriorly, from the median section commence two rows of spines which increase in numbers to the extremity, above with two rows of spines complete, except a small section anteriorly. Male appendages somewhat similar to *fuliginosus*, but the superanal plate is by no means so produced, the cerci being fully exposed, the latter much the same as in the above, but the subterminal spine very much hooked. Subgenital plate as in *fuliginosus*, one specimen showing the cylindrical appendages well developed, while they are absent in another.

Head and pronotum dull lemon-yellow, washed above with wood-brown (faintly in one individual), lightest below. Antennæ wood-brown. A dull, dark brownish line is continued back of the eye on the superior portion of the lateral lobes of the pronotum. Central portion of the pronotum marked with four rather regular blotches of blackish; the sloping lateral margin with a broad band of white. Elytra green, external border lightest, darkest centrally. Abdomen rich wood-brown, scrumbled with dull ochre, beneath pale yellowish. Femora pale yellowish green, the posterior part infuscated in several specimens; ex-

tremities black in the posterior pair. Tibiæ the same, washed above with a dull purplish brown. Tarsi blackish.

Measurements of one individual:

Total length	. .	24 mm. (abdomen somewhat cramped).
Pronotum	. .	5 "
Elytra	. . .	8.5 "
Posterior femora	.	19 "
Posterior tibia	.	22.5 "
Antennæ (approximate)		50 "

While working upon the above described species of *Cupnobotes*, I had occasion to examine the name *Orchesticus* Saussure, 1859, which I have found to be preoccupied by *Orchesticus* Cabanis, 1851, in Ornithology. Accordingly, I propose the name *Stipator* (*i. e.* a guard), which will cause the species to stand as follows:

Stipator americanus Saussure.
Stipator haldemanii Girard.
Stipator minutus Thomas.
Stipator stevensoni Thomas.
Stipator cragini Bruner.
Stipator scudderi Bruner.

Family ACRIDIDÆ.

Syrbula eslavæ n. sp.

Type; one male, Eslava, D. F., x.

Very distinct from any described species of the genus, agreeing somewhat with *montezuma* Saussure, though well removed from that form. The color pattern is at once striking and distinctive.

Size small. Head well produced, longer than the posterior breadth, considerably elevated above the level of the pronotum; fastigium developed, equal to the width between the eyes, the anterior angle narrowly rounded; lateral and median carinæ moderately developed, the latter extending back not quite one-half the length of the head; scutellum not excavated; facial angle moderately oblique. Frontal costa rather broad, sulcate from between the antennæ to the clypeus, rather coarsely punctate; facial carinæ all prominent and extending to the clypeus, the median pair nearly parallel, slightly constricted at the ocellus, moderately diverging inferiorly. Eyes moderately developed, about one and a half times as long as the infra-ocular groove. Antennæ slightly longer than the head and pronotum, basally depressed, tip acuminate. Pronotum with all the carinæ well marked, the lateral ones constricted much before the middle, divergent both anteriorly and posteriorly, on the metazona the angle of divergence being much reduced posteriorly; the transverse sulcus intersecting near the middle. Anterior border of the pronotum almost straight, posterior one broadly rounded, slightly angulate. Lateral lobes of the pronotum finely punctate on the metazona, the anterior border, and coarsely on the inferior median section.

Tegmina ample, just surpassing the hind femora; ulnar area reticulate anteriorly, with one row of cells increasing in depth posteriorly; discoidal area reticulate anteriorly, with one row of cells. Hind femora and tibia rather slender. Subgenital plate acuminate, punctate, inferiorly with a basal pit.

General color dull blackish brown variegated with several shades of green. Head with two stripes of pea-green extending from near the anterior border of the eye on to the pronotum, the lower margin being on a level with the middle of the eye, this being bounded inferiorly by a blackish stripe, the lower face being dull greenish; the median facial carinæ markedly greenish. Eyes dull brown, splashed with blackish; antennæ brownish. The scapular area of the tegmina with a streak of bluish green. Wings deep blackish, more transparent posteriorly. Abdomen deep blackish. Hind femora and tibiæ almost solid black, except the superior area of the former which is pea-green.

Measurements:

Length of body	21.5 mm.
Length of tegmina	18 "
Length of hind femora	9 "
Length of antennæ	9 "

It is quite possible that this species may be generically or subgenerically distinct from *Syrbula*, but at present I have placed it in that genus with which it exhibited affinity, though it differs radically from the previously known species, particularly in the pattern and amount of reticulation of the tegmina.

HERUS* subg. nov.

Differing decidedly from *Syrbula* proper in general proportions, in the pattern of the lateral carinæ of the pronotum, the greater facial angle, the absence in the female of any fuscous mottling of the tegmina, the smaller eyes, and in various other points of structure. The full characters are those of the only known species. Recognition of this generically would not be unwarranted, but at present I prefer to leave it of subgeneric rank.

Syrbula (Herus) valida n. sp.

Types: two specimens; females, Eslava, D. F., x.

Form stout, thick and heavy. Size medium. Fastigium well produced, acute angulate, lateral carinæ moderately developed, median carina distinctly visible, much stronger anteriorly. Facial angle oblique, the angle greater than *Syrbula*. Eyes small, superior anterior border produced, about equal to the infra-ocular space. Frontal costa well produced, decidedly so superiorly, constricted at its superior junction, very slightly so at the ocellus, then diverging and finally ending almost at the clypeus; moderately sulcate from below the antennæ, deepest at the ocellus, sparsely punctate like the rest of the face. Lateral foveolæ large and deeply excavated. Lateral facial angles fairly prominent Antennæ depressed

* *i. e.*, a master of slaves.

basally, acuminate, about one and one-half times as long as the head. Pronotum with the three carinæ distinctly visible, the lateral ones strongly sinuate half way between the anterior margin and the transverse sulci, parallel on the metazona; anterior border truncate, posterior broadly rounded; lateral lobes with the anterior and posterior margins moderately converging, inferior margin straight posteriorly, moderately ascending anteriorly; lateral lobes of the metazona and the median area of the prozona coarsely punctate. Tegmina shorter than the abdomen, reaching the base of the sexual appendages, fairly broad; the expansion of the costal area much greater than in *Syrbula*. Hind femora comparatively slender, exceeding the abdomen, with all the carinæ well marked; hind tibiæ with seventeen spines in the outside row. Interspace between the mesosternal lobes slightly broader than long; of the metasternal lobes longer than broad, deeply impressed.

General color light green, abdomen and under surface brown, suffused more or less strongly with purplish red. Median streak on head light purplish (approaching solfarino), flanked by a deep green, then the general color into which it shades off, the dividing line between it and the median streak being a faint blackish line. Eyes wood-brown, flecked with blackish. Postocular streak narrow, deep purplish red, not reaching the anterior border of the pronotal lobes. Dorsum of pronotum with the median carina the same as on the head; lateral carinæ ochraceous, with a black internal border, which shades off into the general color, the border being absent where the carinæ are most approximate, the external border at this spot having a trace of black. Lateral lobes with a streak of purplish red on the prozona, the streak deepest anteriorly. Tegmina with a streak of light purplish red along the anal vein, expansion of the costal area deep purplish brown; the tip and part of the radial and ulnar area membranaceus. The general tint of the tegmina on the discoidal and inferior radial area tends towards a bluish green. Anterior and median pair of limbs purplish red. Posterior femora light greenish, with the lateral and superior face infuscated with dull blackish, strongest superiorly; genicular lobes deep purplish red. Posterior tibiæ purplish red, spines pale yellowish, with black tips.

Measurements:

Length of body	33 mm.
Length of tegmina	20 "
Length of hind femora	19 "

Orphulella aculeata n. sp.

Types: two specimens; male and female, Cuernavaca, Morelos, xi and vi.*

Apparently allied to *O. pratorum* Scudder, but differing in the form of the fastigium, the color of the post ocular stripe and the tegmina.

Form rather slender. Fastigium acute-angulate; lateral carinæ prominent; interspace deeply excavated; median and posterior sections of the head with a faint median carina. Facial angle vertical to the antennæ, then retreating strongly. Frontal costa strongly constricted at the vertex, slightly expanded at

* The date xi of one specimen, I think may be an error of mine in copying the original, and probably should be vi.

the ocellus, slightly divergent inferiorly, moderately sulcate from the base of the constriction to the ocellus, slightly so inferiorly. Lateral facial carinæ prominent; lateral foveolæ deeply excavated, invisible superiorly. Eyes moderately prominent, much longer than the infra-ocular space, the form being rather circular. Antennæ slightly depressed, moderately acuminate, as long as the head and pronotum. Median and lateral carinæ of the pronotum fairly prominent, weakest about the median section, strongest posteriorly; the lateral carinæ slightly diverging anteriorly, considerably so posteriorly. Transverse sulcus intersecting the median carina at the middle. The anterior margin of the pronotum truncate, the posterior obtuse-angulate. Lateral lobes of the pronotum with the anterior margin slightly sloping; the posterior margin almost vertical; the lower margin with an obtuse lobe posterior to the anterior exposure; the lower angle very slightly lobiform. Tegmina surpassing the hind femora, narrow, tip rounded. Posterior femora moderately large; tibiæ with 9 spines on the external border. Cerci of male attenuate. The form of the subgenital plate cannot be ascertained as it is mutilated.

General color brown, of various shades, with a green dorsal stripe extending from between the eyes to near the tip of the tegmina. Fastigium blackish brown. Eyes clouded with dark brown. Antennæ wood-brown. Post ocular stripe dull brown, extending across the superior half of the lateral lobes, and also crossing the lateral carinæ on the metazona and forming a border to the superior surface. Lower surface dull ochraceous, strongly touched with yellowish on the lower face. Anterior and median pair of legs light brown. Posterior femora light brown, with a central darker streak, the same color strongly suffusing the apical section. Posterior tibiæ pale brown, spines pale yellowish, with black tips.

♀.—Form somewhat heavy (for an *Orphulella*). Fastigium less than a right angle; lateral carinæ slightly developed; interspace moderately excavated; the whole head bearing no trace of a median carina. Facial angle vertically descending to the antennæ, then retreating at about an angle of forty-five degrees. Frontal costa similar to that of the male, but much less deeply sulcate. Lateral facial carinæ distinctly visible. Lateral foveolæ deeply excavated. Eyes slightly prominent, appreciably longer than the infra-ocular space, the form somewhat circular. Antennæ mutilated. Median and lateral carinæ of the pronotum moderately prominent, the latter strongest posteriorly where they are moderately divergent. Transverse sulcus intersecting the median carina at the middle. Anterior margin of the pronotum very slightly produced; posterior margin obtuse-angulate. Lateral lobes of the pronotum with an obsolete inferior lobe as in the male. Tegmina considerably surpassing the hind femora, narrow, tip rounded. Posterior femora fairly large, somewhat expanded, tibiæ with nine spines on the external border.

General color light green, tending towards bluish on the tegmina. Lower surface and abdomen dull purplish brown; the lower face with a green tint of greater brilliancy than the general color. Eyes wood-brown, with a transverse stripe of blackish brown, this being an anterior extension of the post ocular stripe. Post ocular stripe extending back and decorating the lateral carinæ of the pronotum; on the head it is rather faint and is composed of two bars of color, the lower dull blackish, and the upper pale yellowish; on the pronotum the same only richer, weak centrally, the black being above the yellowish on the metazona, and on the superior surface of the pronotum. Tegmina with the apical third somewhat transparent, of a pale brownish tint. Anterior femora and

tibiæ purplish red shading to dull greenish distally. Median femora and tibiæ green, deepest distally. Posterior femora green, with a line of yellow inferiorly; tibiæ mottled gray-brown, spines very pale yellowish, with blackish tips.

Measurements:

	♂	♀
Length of body	15 mm.	21 mm.
Length of tegmina	14 "	17.5 "
Length of hind femora	10 "	11.5 "
Length of antennæ	6 "	

Orphulella neglecta n. sp.

Type: one male; Orizaba, Vera Cruz, vi.

This form superficially bears somewhat of a resemblance to *O. pelidna*, but it differs decidedly in the smaller size, comparatively longer tegmina and hind femora, the angle of the face and the cell structure of the ulnar area of the tegmina.

Form rather slender. Fastigium acute-angulate, lateral carinæ moderately prominent, interspace very slightly excavated, no trace of a median carina on the head. Angle sharply retreating. Frontal costa rather narrow, constricted at the apex, slightly expanding inferiorly, sulcate throughout its entire length, deeply, except inferiorly. Eyes prominent, slightly longer than the infra-ocular space. Antennæ longer than the head and pronotum, slightly depressed basally, apically bluntly acuminate. Pronotum with the three carinæ well marked, the lateral ones strongly divergent posteriorly. Transverse sulcus cutting the median carina behind the middle. Anterior border of the pronotum truncate; posterior obtusely rounded. Lateral lobes rather shallow; inferior posterior border rectangulate, the lower margin obtuse-angulate centrally; metazona granulose. Tegmina exceeding the hind femora, broadly rounded at the tip: ulnar area occupied by an irregular series of cells, largest distally. Hind femora moderate; tibiæ armed with thirteen rather small spines. Cerci attenuate, the form of the subgenital plate not being ascertainable.

General body color blackish brown, becoming dull yellowish beneath, with a dorsal stripe of greenish yellow. Ths general color passes from the full tint through a wood-brown into the color of the under surface, the lower face being reddish brown. The dorsal stripe is widest anteriorly, occupying the whole width of the superior surface of the head and pronotum. Eyes olivaceous, with blackish blotches. Antennæ reddish brown, infuscated toward the tips. The post ocular stripe is a pale olivaceous line on the head, on the pronotum black, crossing the lateral carinæ at the transverse sulcus and appearing on the upper surface. Tegmina, except the anal angle, uniform blackish brown. Anterior and median pair of limbs red-brown, touched with blackish at the joints. Posterior femora pale brownish, with a bar of pale yellowish below; tibiæ the same ground color, with the spines very pale yellowish tipped with black.

Measurements:

Length of body	14 mm.
Length of tegmina	13.5 "
Length of hind femora	9.25 "
Length of antennæ	7 "

Orphulella viridescens Scudder.

1899, *Orphulella viridescens* Scudder, Can. Ent., xxxi, p. 187. July, 1899.

Four specimens; two males, two females; Eslava, D. F., x.

The measurements of the females are slightly smaller than those of the type specimen. Inasmuch as the male was previously unknown, a short description would not be out of place.

Form rather heavy. Fastigium acute-angulate, scutellum slightly foveolate. Vertex rectangulate; the face from between the antennæ retreating decidedly. Frontal costa very much constricted apically, slightly expanding and becoming obsolete inferiorly, not sulcate, delicately punctate. Eyes moderately prominent, subpyriform, the anterior margin flattened. Antennæ red, as long as the head and pronotum, depressed. Pronotum with the carinæ equally distinct, the lateral ones being most approximate half way between the anterior border and the transverse sulcus, diverging posterior to the constriction, the angle of divergence not so great on the metazona. Transverse sulcus dividing the pronotum slightly back of the middle. Anterior margin of the pronotum truncate, posterior rotundatoangulate. Tegmina equaling the hind femora, the pattern the same as in the female; but the central line, which is very pale in the female, is very marked, and the roseate tint is absent. Hind femora longer than the abdomen, rather robust; the tibiæ with eleven to thirteen spines on the external margin. Cerci attenuate, slightly incurved at the tips. Subgenital plate acuminate, moderately punctate.

General color reddish brown, variegated with light green. Eyes ochraceous, suffused with grayish. Antennæ purplish. A dorsal streak of green extends from the vertex to the tip of the tegmina, though on the head and prozona it is suffused with brownish, and touched on the latter with yellowish. The post ocular stripe is represented by a darker band of brown; posterior two-thirds of the metazona above with a lateral bar of blackish. Tegmina blackish, except the anal and costal fields which are green. Abdomen dull purplish red. Lower face yellowish white. Anterior limbs pale purplish red; median limbs with the tibiæ the same, the femora being greenish yellow. Posterior femora purplish red, touched with greenish centrally; posterior tibiæ dull purplish gray.

Measurements:

Length of body	15 mm.
Length of tegmina	12.5 "
Length of hind femora	10 "
Length of antennæ	5.75 "

Plectrotettix viatorius Saussure.

1861, *Stenobothrus viatorius* Saussure, Revue et Magas. de Zool. (2), xiii, p. 317.

Seven specimens; five females, two males, Tacubaya, D. F., v, and Cuernavaca, Morelos, vi and ix, '98.

These specimens show a great variation in color, the two males being very dark, one having the lateral carinæ on the metazona, the posterior border of the prozona, and the anterior border of the lateral lobes of the pronotum pale yellowish.

Sphenarium ictericum Gerstaecker.

1873, *Sphenarium ictericum* Gerstaecker, Stett. Ent. Zeit., xxxiv, p. 196.

One specimen; ♀, Cuernavaca, Morelos, xi.

Machærocera mexicana Saussure.

1859, *Machærocera mexicana* Saussure, Revue et Magas. de Zool. (2), ix, p. 391.

Five specimens; all males, Cuernavaca, Morelos, ix.

Machærocera sumichrasti Thomas.

1874, *Machærocera sumichrasti* Thomas, Bull. U. S. Geol. and Geog. Surv. Terr. (1st Ser.), No. 2, p. 70.

Three specimens; all males, Orizaba, Vera Cruz, vi.

These specimens differ but slightly from a female of the same species in my collection from Atoyac, Mexico. The greatest amount of variation is in the median facial (or costal) carinæ, which in one are inferiorly expanded then contracted so as to form a flasked-shaped depression, a trace of which is visible in another specimen.

Arphia nietana Saussure.

1861, *Tomonotus nietana* Saussure, Revue et Magas. de Zool. (2), xiii, p. 321.

Three specimens; one ♂, two ♀, Eslava, D. F., 8000 feet elevation, x.

These agree perfectly with Saussure's description.

Tomonotus azteeus Saussure.

1861, *Œdipoda azteca* Saussure, Revue et Magas. de Zool. (2), xiii, p. 397.

One specimen; ♂, Cuernavaca, Morelos, xi.

This specimen is smaller than Saussure's minimum measurements of males.

	Saussure's minimum.	Cuernavaca specimen.
Length of body . .	15 mm.	14 mm.
Length of tegmina .	17 "	15.5 "

Lactista inermus n. sp.

Type: one specimen, ♂, Cuernavaca, Morelos, vi.

This specimen is allied to *L. punctatus*, but differs decidedly in the pronotum not being crested.

Form rather slender. Head thick and blunt; the angle of the vertex rounded; the depression of the scutellum extending forwards and downwards, connecting with the frontal costa between the ocelli. The frontal costa is moderately sulcate, the lateral carinæ connecting with the borders of the fastigium, and extending as a raised ridge around the superior margin of the eye, below they are widely divergent; the lateral carinæ of the face being very prominent. Antennæ slender, acuminate, very much longer than the head and pronotum. Eyes moderately prominent, ovoid, longer than the infra-ocular space. Pronotum with no

trace of a crest, the median carina being only slightly visible anteriorly and posteriorly. Anterior margin of the pronotum slightly produced centrally; posterior margin nearly rectangulate. Lateral carinæ very slightly developed, on the metazona the line dips from the shoulder angle and terminates a distance below the usual point. Lateral lobes of the pronotum with the lower margins slightly trimmed anterior, and slightly produced posteriorly. Tegmina well developed, greatly exceeding the hind femora. Hind femora moderately exceeding the abdomen. Hind tibiæ with seven spines on the external border. Cerci erect, rather blunt; subgenital plate acuminate, both moderately pilose.

General color dark brownish, mottled with pale yellow, touched with pink on the face and blackish on the head and pronotum; under surface posteriorly yellow. Eyes brownish gamboge. Antennæ purplish brown. Tegmina blotched with blackish, posterior section of the apex membranous. Wings with the basal section vermilion, the remainder infuscated with a membranous spot near the apex; anterior border deep brown. Hind femora yellowish, with two blackish bands, the distal extremity also being blackish. Hind tibiæ with the proximal half yellowish, with one blackish band, distal half pinkish. Tarsi yellow.

Measurements:

Length of body	18 mm.
Length of tegmina	20 "
Length of hind femora	10.5 "
Length of antennæ	10 "

Trimerotropis monticola Saussure.

1884, *Trimerotropis monticola* Saussure, Prodrom. Œdipod., p. 170.

Three specimens; one ♂, two ♀, Eslava, D. F., 8000 feet, x.

One specimen, a female, exhibits a much greater length of tegmina than the others. Compared with Saussure's measurements it stands 28.5 mm., against 25, the other female in the collection measuring 26.5 mm.

Tæniopoda picticornis Stoll.

1873. *Tæniopoda picticornis* Stoll, Recensio Orthopterorum, I, p. 51.

Eight specimens; six ♂, two ♀, Cuernavaca, Morelos, xi.

Rhomalea colorata Serville.

1839, *Acridium coloratum* Serville, Orthoptères, p. 674.

Nine specimens; five ♂, four ♀, Victoria, Tamaulipas, vii.

Schistocerca carinata Scudder.

1899, *Schistocerca carinata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiv, p. 449.

One specimen; male, Tacubaya, D. F., xi.

Schistocerca pyramidata Scudder.

1899, *Schistocerca pyramidata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiv, p. 454.

One specimen; female, Rio Cocula, Guerrero, xii.

This agrees very well with Scudder's description of the type from Cuernavaca.

Schistocerca vaga Scudder.

1876, *Acridium vagum* Scudder, Proc. Bost. Soc. Nat. Hist., xvii, p. 269.

Five specimens; females, Tacubaya, D. F., v.

Two of these specimens are much lighter in color than the others, and it is with some hesitation I place them here, though separation would be difficult.

Melanoplus spretis Thomas.

1865, *Acridium spretis* Thomas, Trans. Ill. State Agr. Soc., v, p. 450.

One specimen; ♂, Tacubaya, D. F., viii.

This specimen is a more southern record than any to my knowledge.

Melanoplus corpulentus Scudder.

1899, *Melanoplus corpulentus* Scudder, Proc. U. S. Nat. Mus., xx, p. 313.

Ten specimens; four males, six females, Eslava, D. F. (9), x, and Orizaba, Vera Cruz (1), vi (xi?).

Melanoplus sp. ?

Two specimens; ♀, Orizaba, Vera Cruz, vi, (xi?).

The females of this genus are very difficult to determine without accompanying males, so I have reserved my decision on these specimens until a satisfactory amount of material of both sexes is acculated to form the basis of anything like accurate determination. One male of *M. corpulentus* is labeled and dated the same, but that these are distinct from *corpulentus* is perfectly plain on an examination of six females from Eslava.

Perixerus lævis n. sp.

Type; one specimen; ♀, Eslava, D. F., x.

This species differs from *P. squamipennis* Gerstaecker in the absence of pubescence and in the greatly different color pattern.

Form moderately slender. Head with the scutellum very slightly excavated; frontal costa shallowly sulcate inferior to the antennæ, punctate superiorly; lateral facial carinæ obsolete. Eyes almost hemispherical, the base being anterior. Antennæ longer than the pronotum. Pronotum finely punctate superiorly, and on the lateral portion of the metazona. Anterior border semi-truncate, posterior about the same. Posterior margin of the lateral lobes obliquely descending; lower margin obtuse-angulate. Tegmina as in *squamipennis*, the venation being strongly in relief. Posterior tibiæ with eight spines on the external border. The entire specimen glabrous.

General color deep olivaceous above, naples yellow beneath. Head and pronotum with a central line of crimson, which is replaced by one of yellowish on the abdomen. Side and front of face washed with crimson, the same tint covering the lower section of the lateral lobes of the pronotum. Eyes dark ochraceous, touched above with black. Antennæ black, with a narrow distal yellow annulation on each segment. Abdomen with the yellow of the under parts extending up along the posterior border of each segment, the body of each of the same being centrally lined with black. Tegmina deep olivaceous, with the venation outlined in dull yellowish. Median pair of limbs above olivaceous, below yellowish, with a lateral line of blackish. Posterior femora yellow, the upper genicular lobes and the pattern of the lateral face black. Posterior tibiæ light olivaceous, with a basal spot of black, and a narrow band of yellow; the lower surface with a line of black, which color tinges the distal portion; external border with eight spines, each tipped with black. Hind tarsi yellowish, spotted with black.

Measurements:

Length of body	22 mm.
Length of tegmina	4.5 "
Length of hind femora	11.5 "
Length of antennæ	7 "

The specimens representing the subfamily Tettiginæ, numbering three, I have not attempted to determine, more material being needed for accurate specific determination.

On PIGRITIA Clem.

BY WM. G. DIETZ, M.D., HAZLETON, PA.

This genus, of which *P. laticapitella* Clem. is the type, is characterized by its author as follows (Proc. Acad. Nat. Sci., May, 1860, ed. Stainton, p. 135):

Forew ings narrow, elongated, pointed and very slightly retuse on the costa before the tip. The subcostal sends to the costa, before the apical third of the wing, a long, thick vein, which arises behind the middle and subdivides into three branches at the tip, the apical being forked, with one of its branches delivered to the tip, and the others to the costa before it. The discoidal cell is much elongated and narrow, and sends to the hinder margin a disco-central branch. The median is three branched at the tip, all of which are short, and the two upper veins arise on a common stalk. Submedian is forked at the base, with the lower branch nearly obsolete. Hind wings narrowly lanceolate, broad at base, with interior angle rounded. The subcostal vein is simple and extended to the tip. Discoidal cell closed by a very faint nervure, giving rise to a simple nervule. Median nervure is three branched, the last two branches from a common base. Head smooth, with decumbent scales, slightly retracted. Forehead broad and rounded; face with the scales spreading out at the base of the tongue, so as to make it nearly equally broad. Eyes oval, nearly vertically placed. Ocelli small. Labial palpi very short, smooth; first and second joints rather thick; terminal joint pointed, slender and as long as the second. No maxillary palpi. Antennæ setaceous, simple in the female, microscopically pubescent in the male, rather more than one-half as long than the forewings; basal joint flattened and expanded into a small eye-cup, with ciliæ in front. Tongue scaled, rather longer than the thorax beneath.

Dr. Clemens further adds: "I have but one male, which is *without labial palpi*, etc." There is scarcely a doubt that he failed to recognize these extremely small, almost rudimentary organs in the male. He also describes the discoidal cell of hind wings closed by a very faint nervure; it is open, except between veins 6 and 7, where it is closed by a faint, oblique vein.

A careful study of the material in my collection has led to the discovery of characters not in keeping with *Pigritia sensu* Clem. Looked upon as a whole, the species present a habitus peculiarly their own, and form a well-defined group of the family Œcophoridæ, analagous to the Blastobasidæ of Lord Walsingham, to which, indeed, they would bear a very close relationship, was it not for the very different formations of the labial palpi and the absence of the excision in the antennæ of the male.

CHARACTERS OF THE GROUP.

Head smooth scaled, with closely appressed scales, rarely somewhat roughened. Forehead broad and rounded; face more or less strongly receding below. In some males the scales diverge from the median line below, disclosing a more or less distinct, glabrous fossa, which, in one genus (*Ploiophora*), affords lodgment for the labial palpi of the male in repose. Eyes oval, moderately prominent. Labial palpi very short, inconspicuous or almost rudimentary in the males (except *Ploiophora*); longer and more distinct in the females (except *Dryope* and *Epigritia*). Maxillary palpi obsolete. Tongue long and scaly throughout. Antennæ setiform, about two-thirds the length of fore wings, stronger, finely pubescent and with a line of cilia beneath in the males, simple and smooth in the females, basal joint expanded into an eye-cup, with strongly marked pecten.

Fore wings elongate, lanceolate; costa feebly convex in some, straight or somewhat depressed along the middle third or two-fifths. Cilia over one. All veins present; veins 2 to 5 close together from posterior angle of cell; 4 and 5 stalked or free; vein 2 proceeds to hind margin at an almost right angle to the posterior median; veins 7 and 8 stalked, vein 7 to apex or costa before it, veins 9 and 10 free, generally close together from or near anterior angle of cell, or, more rarely, 9 arises out of 7; vein 11 arises before middle of cell and attains the costa beyond the middle third; vein 1*b* distinctly forked at the base with the lower branch less distinct. Cell long and narrow, closed, truncate behind. Hind wings narrow, lanceolate; costa approximately straight, anal angle strongly rounded, almost lobed; hind margin impressed behind anal angle, then feebly curved to apex. Cilia long. 7 veins, 5 absent, cell open, except between veins 6 and 7, where it is closed by an oblique, delicate vein, nearly opposite to where the posterior median divides into its end branches (veins 3 and 4); vein 6 arises as a pseudoneuron near the base, bisects the cell into two unequal halves, until it reaches the fragmentary transverse vein, when it becomes a true vein and attains the hind margin at some distance from the tip; the anterior median runs close to the costa and attains the latter shortly before the tip.

The moths are generally small sized, rarely expanding more than one-half inch. Predominating colors ochreous to fuscous brown,

with a more or less pronounced silky lustre; metallic tints in some species, absent in others. Male with anal tuft of ochreous, erectile scales; lateral claspers slender, geniculate at base and recurved upward, with slender, finely setulose appendages. The antennal structure has been mentioned before; another secondary sexual character consists in a scale-cushion of the anterior tibia above the inner apical angle. Female with protruding ovipositor. I regret to state that to the best of my knowledge, nothing is known of their primary stages.

The following genera have been recognized:

Veins 4 and 5 of fore wing stalked (Pl. VI, fig. 3*a*).
  Vein 9 free (Pl. VI, fig. 3*a*).
    Palpi of moderate length and distinct in both sexes, terminal joint depressed; second joint of ♂ with sensitive area within; simply rounded in the female (Pl. VI, fig. 2*a* and 2*b*)..... **Ploiophora.**
    Palpi of unequal length in the sexes; very short and rudimentary in the male, distinct, with the terminal joint pointed in the female (Pl. VI, fig. 3*c* and 3*d*)..... **Pigritia.**
    Palpi equal, very small and indistinct in both sexes (Pl. VII, fig. 8*a* and 8*b*). **Epigritia.**
  Vein 9 of fore wing out of 7 (Pl. VII, fig. 10*a*)..... **Pseudopigritia.**
Veins 4 and 5 of fore wing not stalked (Pl. VII, fig. 12*a*)..... **Dryope.**

PLOIOPHORA gen. nov.

Characterized and differentiated from the other genera of the group by the peculiar formation of the labial palpi in the male. Labial palpi moderately long, ascending but scarcely attaining the middle of the front. Male: first joint porrect and nearly as long as the second, latter ascending with an elongate, smooth sensitive area within, outside scaly; third joint minute, depressed, scaly; in repose, the palpi are folded back into a glabrous frontal groove. In activity the palpi are thrown forward and diverge outwardly in such a manner that the inner surface becomes inferior, and the third joint is deflected outward. Female: labial palpi feebly compressed, first joint short, second entirely scaly, third nearly as long as the second, pointed, depressed. Veins 4 and 5 of fore wings stalked, 9 free.

The second joint of the palpi in the male has a certain resemblance to a boat, hence the name. The front of the male has a triangular fossa for the reception of the palpi, scales divergent; smooth scaled and without fossa in the female. Otherwise the genus does not differ from *Pigritia* proper.

Two species are recognized:

Anterior wings less elongate, fascia feebly curved (Pl. VI, fig. 1)..... **ampla.**
Anterior wings more elongate, fascia strongly curved toward the dorsal margin (Pl. VI, fig. 2)..... **fidella.**

P. ampla sp. n. (Pl. VI, fig. 1). Male.—Greyish fuscous; thorax, head and antennal eye-caps greyish luteous, with metallic lustre, antennæ dark fuscous. Palpi pale ochreous, second joint dusted with fuscous above its inner, surface smooth and surrounded by dark brown scales. Anterior wings four times as long as wide; costa nearly straight for three-fourths its length, dusted with dark fuscous scales, more dense along the costa and on the fold, the whole wing has a somewhat brassy reflection. A whitish fascia at one-third the wing length, rectangular to the margins and faced externally by a line of dark fuscous scales; two dark fuscous dots at end of cell and a third one immediately below near the end of the fold, this latter is a trifle nearer the base. Cilia concolorous and like the apical part of wing, dusted with dark fuscous and some scattered white scales. Hind wing grey, fuscous towards the apex. Abdomen above dark fuscous, first two segments more tawny, with a feeble cupreous lustre. Under side: thorax and femora silvery, tinged with fuscous; abdomen anterior and outer side of middle and hind legs brownish fuscous, inside of latter silvery, tinged with ochreous; apex of tarsal joints with a pale annulation; fore wings dark fuscous, hind wings a little paler.

Expanse 12. mm., .48 inch.

Hab.—Hazleton, Pa.

All the specimens before me are males; a female specimen in poor condition I refer with some hesitation to the present species; it has the labial palpi fuscous externally, yellowish fuscous on the inner side; fascia of fore wings indistinct.

P. fidella sp. n. (Pl. VI, fig. 2). Male.—Pale greyish fuscous; head and antennal eye-caps paler, tawny, with scarcely any metallic reflections, antennæ dark fuscous. Labial palpi of male pale yellow, sprinkled with fuscous scales above. Fore wings more elongate, five times as long as wide; costa slightly retuse along the middle, dark fuscous; basal space limited at about one-third the wing length by a fascia, strongly curved inwards towards the dorsal margin; a paler space in disk beyond the middle, enclosing two dark fuscous dots at end of cell; apical part of wing and adjoining ciliæ dusted with dark fuscous, with a sprinkling of white scales, cilia greyish fuscous; hind wings greyish fuscous, cilia the same. Abdomen greyish fuscous, with some metallic lustre above. Under side: thorax and femora silvery white; anterior legs and outer side of middle and hind legs fuscous, the latter ochreous-white on inside; tarsal joints obscurely annulate at the apex; wings fuscous.

In the female, head, thorax and antennal eye-caps darker than in the male, with stronger metallic reflections, the labial palpi fuscous, especially towards the apex.

Expanse 11. mm., .44 inches.

Hab.—Hazleton, Pa.

Not rare at electric light. Males predominate. I have but one female.

PIGRITIA Clem.

Labial palpi of male minute, almost rudimentary, the apex scarcely visible beyond the base of the tongue; first joint very stout, tufted beneath, second nearly as wide as long, third very minute, subacuminate, nearly concealed by scales; female always distinctly visible beyond the base of the tongue; basal joint cylindrical, second and third slightly compressed, the latter always distinct, pointed.

Fore wings with veins 4 and 5 stemmed, 9 free.

A genus of some extent. The species are closely allied and distinguished as follows:

Fore wings less elongate, costa more or less convex from the base; vein 7 of fore wing to costa before apex (Pl. VI, fig. 3*a*).
Labial palpi of female longer, very evident; second joint longer than the third (Pl. VI, fig. 4).
Basal space paler, fascia curved; stigmata distinct.... ..**confusella.**
Dark fuscous, overlaid with purple; basal space scarcely paler; fascia and stigmata obsolete.....**purpurella.**
Basal space paler and sending a projection into the disk; stigmata distinct (Pl. VI, fig. 6)... .....**basilorella.**
Labial palpi of female shorter, less distinct; second and third joints equal (Pl. VI, fig. 3*d*).
A pale, feebly curved fascia at one-third the wing length (Pl. VI, fig. 3). **laticapitella.**
A dark band just before the middle (Pl. Vi, fig. 5).....**mediofasciella.**
Fore wings more elongate; costa straight or slightly depressed from near the base, vein 7 of fore wing to apex (Pl. VI, fig. F).
Fore wings not tinged with yellow; pale fascia distinct.
Fascia without projection into the disk externally.
Labial palpi dark fuscous.
Fascia at one-third, straight, basal space with golden reflection. **ornatella.**
Fascia at two-fifths, curved; with scarcely any metallic lustre. **angustipennella.**
Labial palpi ochreous; a straight fascia at one-third; stigmata obsolete. **trisella.**
Fascia with an angular projection into the disk externally..**spoliotella.**
Fore wings tinged with yellow; fascia present.....**arizonella.**
Fore wings fuscous; no fascia.....**obscurella.**

P. confusella sp. n. (Pl. VI, fig. 4). Male.—Head and eye-caps light tawny, ochreous, with a strong brassy lustre; scales of front smooth, not separated by a fossa. Labial palpi extremely minute, basal joint compressed, dusted with fuscous, posteriorly from its base arises a pencil of dark bristle-like hairs, second joint about as wide as long, third minute, scarcely perceptible. Thorax silvery gray, fore wings less elongate, costa somewhat convex from the base;

ground color a sordid white, with an ochreous tinge, overlaid with fuscous scales, a strongly curved pale fascia at one-third, illdefined toward the base, convex externally, and equidistant from the base at both margins of the wing, extreme costa deep fuscous; basal space darker towards the base, especially adjacent to the margins; middle part of wing dark fuscous in the costal half of the wing, paler towards the inner margin. Opposite the beginning of the costal ciliæ is a triangular space, dusted over with white scales and limited towards the apex by a darker, zig-zag fuscous line, within this space are two dark spots at end of cell and a short line on the dorsal margin immediately beneath; apical part of wing and adjoining cilia sparsely dusted with fuscous scales. Hind wings and cilia of both wings greyish fuscous. Under side: thorax and femora silvery white; abdomen greyish fuscous, legs fuscous, with paler scales; tarsal joints tipped with paler; wings fuscous.

In the female the head and antennal eye-caps are darker, æneo-fuscous; labial palpi dark fuscous, apices of second and third joints a little paler, somewhat compressed, the latter distinctly shorter than the former.

Expanse 10.–12. mm., .42–.48 inch.

Hab.—Pa.; N. J.

Probably occurs over the whole Atlantic district; attracted by light, June, July. Varies in extent and intensity of the dark shadings of fore wings. Superficially, scarcely to be distinguished from *Ploiophora ampla*, the difference in the labial palpi will prevent confusion, third joint in the female of the latter species being longer and depressed. The fascia of fore wing is more strongly curved in *confusella*. From *laticapitella* the present species differs by the longer labial palpi of the female, second joint longer than the third, and the more strongly curved fascia.

P. purpurella sp. n.—Dark brownish fuscous; thorax, head and antennal eye-caps æneo-fuscous, with strong lustre; antennæ dark, blackish. Labial palpi (female) distinct, dark fuscous, a narrow ring at apex of second and extreme apex of third joint paler; latter much shorter than the former; fore wings: costa feebly convex from base to apex, slightly depressed along middle third; deep fuscous brown, overlaid with purple, basal space scarcely paler, limited externally by a regularly curved line, convexity toward the apex and equidistant from the base at both margins; stigmata illdefined; apical part and base of cilia thinly sprinkled with white scales; cilia with three or four indistinct paler lines; hind wings greyish fuscous, cilia paler towards the base. Under side: body and femora silvery grey, tinged with fuscous, last ventral segment with fulvous scales; legs fuscous, tarsal joints with a pale annulus at their apex; wings dark fuscous.

Expanse 11.5–13. mm., .46–.52 inch.

Hab.—Hazleton, Pa. Three ♀, taken in three different years and on the 14th and 15th of June.

P. basilarella sp. n. (Pl. VI, fig. 6). Male.—Thorax, head and antennal eye-caps brassy-golden, very shining, the lower part of face less so; front with-

out fossa. Antennæ rather stout, pale fuscous, indistinctly annulate. Labial palpi extremely short, pale ochreous. Fore wings with the costa convex from the base, slightly depressed along middle third; ground color silver grey, overlaid with pale fuscous; costal half of base overlaid with golden. The basal space extends to about one-third the wing length, paler than rest, very thinly dusted with fuscous, darker along the costa and close to the base, with an elongate fuscous dot in its centre and sending a prolongation into the disk of the wing in the middle; rest of wing darker immediately adjoining the basal space, thence paling toward the apex, a somewhat paler dorso-discal area opposite to beginning of costal cilia, containing two dark dots, the upper on the anterior angle of the cell, the other immediately below; costa and extreme apex more deeply fuscous, apical part and adjoining cilia thinly sprinkled with white scales; hind-wings and cilia of both greyish fuscous. Under side of thorax and femora silvery white, legs fuscous; tarsal joints annulate with pale at apex; the fuscous scales are tipped with pale. Abdomen wanting.

Female.—Thorax, head and eye-caps grayish to subæneous fuscous, metallic reflection much less pronounced, golden tint at base of fore wings absent. Labial palpi quite distinct, basal joint with stiff, bristle-like scales beneath, dusted with fuscous, joints 2-3 pale yellowish, terminal distinctly shorter than second joint. Abdomen pale fuscous above, silvery white, slightly dusted with fuscous beneath.

Expanse 12. mm., .48 inch.

Hab.—Hazleton, Pa.; Iowa and Lawrence, Kansas. One specimen from each locality in my collection. A very distinct species.

P. laticapitella Clem. (Pl. VI, fig. 3). Male.—Greyish fuscous; thorax, head and eye-caps tawny, with brassy lustre, antennæ fuscous. Labial palpi very short, stout, compressed, fuscous, first joint with blackish hairs beneath; third very short. Fore wings: costa convex from the base, ground color silver grey, nearly concealed by fuscous scales, with a purple reflection in certain lights; a whitish fascia at one-third the wing length, slightly curved and somewhat inflexed at the dorsal margin; costa more deeply fuscous, apical part of wing and adjoining cilia sprinkled with white and dark fuscous scales, the former aggregated into an indistinct subapical fascia; dorsal cilia like the hind wings and their cilia, greyish fuscous. Abdomen fuscous, first two dorsal segments tawny fuscous, with a cupreous lustre. Under side: thorax and femora silvery white, dusted with fuscous; abdomen fuscous; legs fuscous, sprinkled with pale scales, tarsal joints with a pale annulus at the apex.

Female.—Thorax, head and antennal eye-caps a little darker and of a more æneous lustre; labial palpi slender, dark fuscous, joints 2 3 equal in length, less prominent and distinct than in the preceding species of the genus. The purple reflection of the fore wings more distinct and becoming brassy towards the base.

Expanse 10.5-12. mm., .42-.48 inch.

Hab.—All the material before me was taken here (Hazleton, Pa.). Probably occurs over the entire middle Atlantic district.

The type of the genus and the *bête noir* of the species of this and the preceding genus. However, I entertain no doubt of this being the true *laticapitella* of Clemens, of which he says*: "Labial palpi

* Clemens, Micro. ed. Stainton, p. 136.

very short, smooth, and first and second joints rather thick; terminal joint pointed, slender and as long as the second." He further states: "I have but one male, which is without labial palpi, etc." No doubt the minuteness of these organs in the male caused them to be overlooked. The palpi of the female of *Ploiophora* do not agree with the description, and those of *P. confusella* have the second joint distinctly longer than the terminal. There is no authentic specimen of *P. laticapitella* in the collection of the Academy of Natural Sciences, Philadelphia, which was the recipient of the Clemens collection, and which I have had the opportunity to examine on several occasion. The specimens bearing the specific name were determined by Lord Walsingham. Among a lot of material sent to his Lordship for determination, 5 specimens were returned as *laticapitella*, and which now I find occasion to distribute among two genera and four species.

P. mediofasciella sp. n. (Pl. VI, fig. 5). Female.—Greyish fuscous: thorax, vertex and antennal eye-caps with a faint cupreous lustre, face tawny; antennæ pale greyish fuscous. Labial palpi pale yellowish, distinct but short, joints 2–3 equal. Fore wings: costa convex from the base to apex; extreme costa and a broad transverse fascia before the middle, dark fuscous, the latter is rectangular to the margins, faced on both sides by a paler shade; apical part more densely dusted with dark fuscous scales, stigmata obsolete, cilia concolorous and with the apical part of the wing sparsely dusted with fine, white scales. Dorsal segments 1–2 of abdomen with cupreous lustre. Under side: thorax, femora and abdomen silvery, thorax sparsely, abdomen more densely dusted with fuscous; legs pale fuscous, speckled with darker scales; tarsal joint not tipped with pale at the apex.

Expanse 12. mm., .48 inch.

A single female specimen taken in July at electric light. Distinguished by the dark, transverse fascia of fore wing.

P. ornatella sp. n. (Pl. VI, fig. 7).—Thorax, patagia, head and antennal eye-caps strongly shining, æneo-fuscous, antennæ dark fuscous. Labial palpi distinct, pale fuscous, second joint above and third darker; the former distinctly longer than the terminal. Fore wings more elongate, costa not convex from the base, depressed along the middle to beginning of cilia; base golden brown, fading outwardly; a curved white fascia at one-third the wing length, not including extreme costa, and equidistant from the base at both margins it fades gradually toward the base. Rest of wing deep purple-brown, a paler dorso-discal area opposite the beginning of the costal cilia, caused by sprinkling of white scales, this area contains two dark fuscous dots at end of cell, outer part of wing with æneous reflections towards base: the margins of the apical part of the wing with the base of the adjoining cilia are sprinkled with white scales; cilia dark grey. Hind wings grey, cilia concolorous, somewhat stramineous toward the apex.

Abdomen: above dark fuscous, segments 1-2 with brassy lustre. Under side: thorax and femora silvery, abdomen fuscous, last 3 segments clothed with fulvous scales; legs brownish fuscous, spotted with paler scales; tarsal joints with a pale annulus at the apex. Fore wings fuscous, with a rufo-æneous lustre in certain lights.

Expanse 11.-12. mm., .44-.48 inch.

Hab.—Hazleton, Pa.

Only females before me. A striking species, distinguished from the preceding species by its more elongate fore wings, with the costa almost retuse from the base, from the following by its pronounced coloration.

P. angustipennella sp. n. Male.—Greyish fuscous. Thorax æneo-fuscous, head and antennal eye-caps tawny, ochreous, shining; antennæ dark greyish fuscous. Labial palpi minute, pale yellow, a pencil of short, stiff, blackish bristles arises from the base of the first joint posteriorly. Fore wings elongate, costa depressed from the base; ground color silvery grey, overlaid with fuscous; basal space with a feeble brassy lustre, limited at two-fifths the wing length by a curved, pale fascia, shading off gradually towards the base into fuscous; the costal end of fascia nearer the base than the dorsal extremity; immediately beyond the fascia the wing is more deeply fuscous in illdefined patches, more marked on the dorsal margin, extreme costa and 2 dots at end of cell, dark fuscous, between the latter and both margins are several smaller illdefined spots, and forming thus an illdefined, transverse line or band, preceding this is a paler area; apical part of wing more deeply fuscous, and with the adjoining cilia sprinkled with white scales. Cilia dark grey. Hind wings greyish fuscous towards the apex, cilia concolorous. Abdomen fuscous above, segments 1 2 feebly æneous, shining. Under side: thorax, abdomen and femora silvery, abdomen dusted with fuscous; legs fuscous, middle and hind pair silvery grey within; apices of tarsal joints paler; wings fuscous, anterior with a feeble æneous lustre.

Female.—Head, thorax and eye-caps æneo-fuscous, shining. Labial palpi dark fuscous, second joint at extreme apex within, paler, distinctly longer than the terminal joint.

Expanse 11. mm., .44 inch.

Hab.—Hazleton, Pa.

Not rare at electric light, June, July. Resembles in form and habitus the preceding species, but is paler, metallic tints, less pronounce, transverse fascia of fore wings curved and a little further removed from the base. Altogether a more sombre and obscure looking insect.

P. tristella sp. n.—Pale brownish fuscous. Thorax, head and eye-caps tawny, æneous, feeble lustre. Labial palpi (♀) rather short, ochreous, somewhat dusky at the apex, third joint shorter than the second. Fore wings elongate, costa depressed from near the base; ground color a silvery grey, evenly overlaid with brownish, fuscous scales, these latter are paler at their bases, giving thus the surface a finely irrorated appearance; a pale, straight fascia at two-fifths the

wing length, not including the extreme costa and equidistant from the base at both ends. Stigmata obsolete; a few white scales scattered over the apical part of wing and the base of adjoining cilia, the latter grey. Hind wings greyish fuscous, cilia grey, paler towards their base. Abdomen brown above, segments 1–2 feebly æneous. Under side: thorax and femora silvery white, abdomen greyish fuscous, spotted with darker scales and clothed with ochreous scales towards the anal extremity. Legs brownish fuscous, middle and hind legs pale ochreous within; tarsal joints with a pale annulus at apex; wings fuscous.

Expanse 11.–11.5 mm., .44–.46 inch.

Hab. – Hazleton, Pa.

Two female specimens in my collection. In appearance closely resembling *Pseudopigritia equitella.*

Differs from *angustipennella* by the somewhat narrower fore wing, the straight fascia and absence of discal dots, from the following by the fascia of fore wing.

P. arizonella sp. n.—Thorax, head and eye-caps greyish fuscous, antennæ dark fuscous. Labial palpi – male—very short, dark fuscous, terminal joint minute; female, distinct, drooping, pale, third joint much shorter than second. Fore wings less strongly elongate, costal margin approximately straight; ground color greyish white, costa fuscous towards the base; strongly tinted with pale sulphur yellow in basal and middle part of wing; an illdefined pale fascia at fully two-fifths the wing length and projecting irregularly into the disk externally, within the fascia there is some dark dusting; base adjoining costa dark fuscous; immediately adjoining the fascia is a dark dorsal, and on opposite costal patch the latter elongate, triangular and more pronounced; apical part of wing more densely dusted with fuscous, condensed along costal margin and somewhat interrupted by paler lines: 2 dark fuscous dots at end of cell and a dorsal spot immediately below, the latter more elongate, apical part with a sprinkling of white scales, cilia cinerous, sprinkled with fuscous and some white scales, hind wings silver grey, cilia concolorous. Abdomen above ochreous, fuscous. Under side: thorax and femora silvery, abdomen pale ochreous, legs dark fuscous; tarsal joints distinctly pale annulate at the apex; fore wings dark fuscous, hind wings paler.

Expanse 10.–11. mm., .40–.44 inch.

Hab.—Huachuca and Nochales, Arizona.

Two specimens, male and female, in my collection. Quite distinct and unlike any other species of the group known to me. A somewhat aberrant form. The labial palpi of the female have the first two joints relatively stouter than in the other species of this genus, the terminal, minute, depressed somewhat similar to the labial palpi of the female in *Dryope*, to which at first I referred this species. However, vein 4 and 5 of fore wings are distinctly stalked. The palpi in the ♂ are drooping, while porrect or subascending in the other species of the genus.

P. spoliatella sp. n.—Ashen grey. Thorax, head and eye-caps tinged with ochreous fuscous; antennæ brownish, with indistinct pale annulations. Labial palpi (♂) rather distinct, third joint small, fuscous. Fore wings moderately elongate, costa very slightly retuse; ground color a sordid white, overlaid with brown scales, extreme costa—from the base—dark fuscous; basal space paler, a pale, illdefined fascia at two-fifths of wing length, which sends a tooth-like prolongation into the middle of the disk externally; adjoining the fascia is a subquadrate, dark fuscous patch resting on the dorsal margin, another opposite, less pronounced on the costa, and extending more or less toward the apex. Two dark dots at end of cell, and and a third dash-like spot immediately below and on the dorsal margin; apical half of wing more densely dusted with fuscous, with a sparse sprinkling of white scales extending also upon the cilis. Hind wings greyish fuscous, cilia concolorous. Abdomen above tawny, with some metallic lustre. Under side: body and legs silvery, tinged with ochreous; fore legs and outside of middle and hind pair fuscous brown; tarsal joints pale at the apex; fore and hind wings fuscous.

Expanse 11. mm., .44 inch.

Hab.—Hazleton, Pa.

Two males. Not distinguishable from *Dryope grisella*, but for veins 4 and 5 of fore wings being stemmed.

P. obscurella sp. n. Male.—Greyish fuscous. Thorax æneo-fuscous, antennal eye-caps and head bright tawny ocherous, with brassy lustre. Labial palpi pale yellowish, terminal joint extremely small. Fore wings entirely greyish fuscous, without fascia; costa depressed from near the base; apical part of wing dark fuscous; stigmata obsolete, sparsely dusted with pale scales at the apex and adjacent cilia, latter dark gray. Hind wings greyish-fuscous, darker towards the apex, cilia concolorous paler at their base. Abdomen above dark fuscons, segments 1-2 feebly æneons. Under side of thorax silvery grey, dusted with fuscous; abdomen beneath and legs fuscous, tarsal joints pale at the apex; under side of wings fuscous.

Female.—Thorax, head and eye-caps æneo-fuscous. Labial palpi distinct, ochreous, dusted with fuscous, the second joint scarcely longer than the terminal; legs a little paler.

Expanse 11.–11.5 mm., .44-.46 inch.

Hab.—Hazleton, Pa.

A male and female specimen in my collection. The absence of all wing markings permits its easy recognition.

EPIGRITIA gen. n.

Differs from *Pigritia* by the rudimentary labial palpi in both sexes; their base surrounded by bristly hairs. Male.—Joints distinct, subequal, terminal very slender. Female.—Joints less definable, concealed by bristly hair. Face strongly retracted. In the male the alternate antennal joints project beneath at the distal end,

giving a subserrulate appearance * Veins 4 and 5 of fore wing are short stemmed in *pallidotinctella,* longer stemmed in *Heidemannella.*

The two species are thus distinguished.

Basal space limited externally by a straight oblique line (Pl. VII, fig. 8). **pallidotinctella.**

Basal space angulate externally (Pl. VII, fig. 9) ..... **Heidemannella.**

E. pallidotinctella sp. n. (Pl. VII, fig. 8).—Thorax, head and eye-caps tawny, tinged with pale fuscous, eye-caps, with darker fuscous scales; antennæ pale fuscous, with indistinct paler annulations. Labial palpi fuscous, terminal joint blackish, second and terminal joints more or less concealed by long, dark, ochreous, bristly hairs of the first joint: joints less distinct in the female. Fore wings moderately elongate; costa feebly convex; ground color pale yellowish; costa dark brown, more marked toward the base, basal space paler than rest of surface, very thinly dusted with pale brownish scales, an oblique dark brown fascia from one-third of dorsal margin to two-fifth of costa, sharply defined and straight towards the base, illdefined outwardly, beyond the fascia is a subtriangular area, thinly dusted with brown, containing two well defined dots at end of cell and an elongate spot on the fold immediately below; towards the apex, this space is limited by an irregular, dark fuscous line; apical part more densely dusted with dark fuscous scales, an aggregation of paler scales at extreme apex. Cilia pale greyish-stramineous, with 4 or 5 irregular and indistinct, paler lines. Hind wings greyish fuscous, cilia concolorous. Dorsal segments 1–2 of abdomen æneo-fuscous, remaining part dark fuscous. Under side of body and legs silvery grey, tinged with luteous; anterior legs and out side of middle and hind legs more or less fuscous, tarsal joints tipped with pale at the apex; under side of wings fuscous.

Expanse 10. mm.. .40 inch.

Hab.—Hazleton, Pa.

Three specimens taken the latter part of July, each in a different year.

E. Heidemannella sp. n. (Pl. VII, fig. 9).—Head and eye-caps dark ochreous fuscous, with purple reflections; anterior part of thorax dark purplish fuscous, posterior part and abdomen above tawny fuscous. Antennæ pale fuscous, with indistinct darker annulations above. Labial palpi extremely small, fuscous, terminal joint darker. Fore wings elongate, ochreous, with dark brown dusting; costa dark fuscous, purplish towards the base; basal square limited externally by an angulated line at one-third the wing length, the dorsal extremity of which is a little nearer the base than the costal end, very thinly dusted with brown scales, rest of wing thickly dusted with dark brown scales; two dots at end of cell and a short dash immediately below on the fold. Cilia grey, costal and apical cilia dusted with dark brown and pale scales. Hind wings silver grey, cilia concolorous. Under side of body and legs ochreous, abdomen, fore legs, out side of middle and hind legs brownish fuscous; tarsal joints tipped with pale at

* Not much importance can be ascribed to this character, as it occurs in some other species, and at times semi-laterally.

apex. Last two ventral segments of abdomen clothed with bright fulvous scales in the female.

Expanse 9.–10. mm., .36–.40 inch.

Hab.—Sulphur Springs, Bedford Co., Pa.

Seven specimens in poor condition received from Mr. A. Busck, Washington, D. C., who informs us that the specimens were taken on Norway Fir (*Abies excelsa*) by Mr. Otto Heidemann, the well known Hemipterist, to whom it gives me pleasure to dedicate this species.

PSEUDOPIGRITIA gen. n.

Characters of *Pigritia* with vein 9 of fore wing out of 7. Labial palpi of ♂ very minute, indistinct; porrect and distinct in the female. Obscure looking forms. The four species recognized are distinguished as follows:

Fuscous; fore wings with distinct transverse fascia.
With three dark dorsal spots beyond the fascia (Pl. VII, fig. 10). **dorsomaculella.**
Without such spots.
Fascia at one-third the wing length ..... **equitella.**
Fascia at fully two-fifths (Pl. VII, fig. 11) ..... **fraternella.**
Silver grey; fascia indistinct ..... **argyreella.**

P. dorsomaculella sp. n. (Pl. VII, fig. 10).—Thorax ashen grey, with brassy lustre, head and antennal eye-caps tawny ochreous, brassy, antennæ fuscous brown, indistinctly annulate with pale. Male.—Labial palpi very short, stout, greyish ochreous, second joint dusted with fuscous beneath, terminal very short. Female.—Distinct, darker, fuscous, joints 2-3 equal, terminal pointed. Ground color of fore wings ashen grey, overlaid with fuscous scales, costa not markedly darker; a pale, curved band at two-fifths the wing-length, ill-defined and passing into the ground color within, externally margined by a distinct, dark brown line; immediately beyond this fascia is a dark fuscous, dorsal spot, another midway between the fascia and apex, and a third spot midway between the second spot and the apex of the wing, these three spots are equidistant from each other; an illdefined costal patch beyond beginning of costal cilia, and some darker dusting along the costa preceding it; cilia greyish fuscous. Hind wings greyish, dusted with fuscous; cilia concolorous. Under side: thorax and femora silvery; abdomen fuscous, legs fuscous brown, middle and hind legs pale ochreous within; both wings brownish fuscous, shining.

Expanse 10.5–11. mm., .42–.44 inch.

Hab.—Hazleton, Pa.

A male and female specimen in my collection. Readily distinguished by the curved fascia and three dorsal spots of fore wing.

P. equitella sp. n.—Thorax, head and eye-caps tawny, with a feeble æneous lustre. Male.—Labial palpi very short, tawny ochreous. Female.—Distinct, dusted with fuscous, joints 2-3 equal, third joint acuminate. Antennæ

brownish fuscous. Fore wings elongate, fuscous brown, with a feeble purple lustre in some light, inclining to brassy towards the base; extreme costa dark fuscous; a pale fascia at two-fifths the wing length, becoming diffused towards the base, externally shaded by an illdefined, darker band; two dark spots at end of cell; external half of wing sprinkled with white scales. Cilia greyish fuscous, sprinkled at their base with white and fuscous scales. Hind wings grey, fuscous towards the apex; cilia concolorous, stramineous at their base near the apex. Dorsal segments 1–2 of abdomen tawny, with brassy lustre, rest fuscous. Under side of body silvery, tinged with pale ochreous, anterior legs and out side of middle and hind legs fuscous, latter silvery within; tarsal joints tipped with pale at the apex; fore wings fuscous brown, hind wings silver grey.

Expanse 10.–12. mm., .40–.48 inch.

Hab.—Hazleton, Pa.

P. fraternella sp. n. (Pl. VII, fig. 11).—Thorax silver grey, with feeble ochreous tinge; head and antennal eye-caps ochreous tawny, shining; antennæ dark fuscous, with very indistinct annulations. Male.—Labial palpi very short, fuscous, terminal joint very minute. Ground color of fore wings greyish, overlaid with fuscous scales; basal space a little paler than the rest of the wing; basal half of costa dark fuscous. A pale, transverse fascia just before the middle, gradually passing into the ground color within, externally to and adjoining it a distinct, dark fuscous band, the latter occupies almost the middle of the wing length; outer half of wing rather densely dusted with fuscous; two dots at end of cell; cilia grey. Hind wings and cilia greyish fuscous. Abdomen above greyish fuscous, segments 1–2 brassy tawny. Under side: thorax, femora, middle and hind legs within silvery, tinged with ochreous fuscous; out side of legs brownish fuscous; tarsal joints pale at their apex; fore wings fuscous, hind wings a little paler.

Expanse 9.5 mm., .38 inch.

Hab.—Hazleton, Pa.

A single male specimen; the transverse fascia is farther removed from the base than in the two preceding species.

P. argyreella sp. n.—Silvery white, tipped with ochreous; antennal eye-caps tawny ochreous, rest of antennæ brownish. Male.—Labial palpi very short, ochreous, tinged with fuscous. Fore wing elongate, tinged with ochreous, especially along the costa and apical part of wing. At two-fifths the wing length is an illdefined transverse paler fascia. Two not very distinct pale fuscous dots at end of cell; immediately beyond the pale fascia, more aggregated darker scales, especially marked at the dorsal margin; cilia greyish. Hind wings and cilia tinged with pale fuscous. Abdomen above tinged with fuscous. Under side of body and legs tinged with pale ochreous fuscous; wings pale fuscous.

Expanse 11. mm., .44 inch.

Hab.—Hazleton, Pa.

A male specimen in my collection. Distinguished from the preceding species by its much paler coloration and more elongate fore wings.

DRYOPE Cham.

Mr. Chambers (Can. Ent., Vol. VI, p. 50) characterizes this genus as follows: "Primaries lanceolate, the costa enters the margin about the middle, discal cell narrow and closed by a nearly straight discal nervure. The subcostal sends off a long curved branch from about its middle, and which attains the margin behind the end of the cell. From the end of the cell the subcostal bends somewhat obliquely upwards to the costal margin. The median is furcate from the end of the cell, both branches being short and bending somewhat suddenly downwards to the dorsal margin, the inner branch being straight and continuous with the discal vein. The discal vein emits five branches, the superior going to the costal margin, the next furcate before the tip, with one of the branches to each margin; the three others go to the dorsal margin. Secondaries narrowly lanceolate, costal vein short, subcostal very long, simple, attaining the costal margin near the tip; cell unclosed; median vein with three nearly equidistant branches. No discal vein, but an independent branch which arises near the median and attains the dorsal margin before the apex."

The other characters given are those of the group, except the labial palpi, which he correctly describes as "short, porrected, densely scaled, almost tufted beneath," and to which I have only to add that these organs are about equally developed in both sexes. Mr. Chamber's statement "the discal vein (fore wing) emits five branches, the superior going to the costal margin, the next furcate before the tip, with one of the branches *to each margin*, etc., is not correct, the lower branch (vein 7) goes to the tip. Cell of hind wing closed between veins 6 and 7.

In some males the tufting of the second palpal joints projects beyond its apex beneath and in conjunction with the shorter, slender, terminal one, gives the palpi a somewhat bifid appearance. In the female the terminal joint is shorter, cone shaped and slightly depressed or drooping. The face is rather strongly retracted, smooth scaled, the scales never spreading but rather concurrent to a point above the base of the tongue. Head closely appressed to the thorax.

The species resemble each other closely with few exceptions. The basal space, well defined, extends to one-third or two-fifths the wing length, and generally limited by a fascia, which may be entire or merely indicated by a costal or dorsal patch, more rarely entirely obsolete.

The species may be separated as follows:

Fore wings with straight, transverse fascia at two-fifth; scales black and white (Pl. VII, fig. 14) ..... **occidentella.**
Fascia, when present, angulate or interrupted.
A dash on the fold and stigmata distinct.
Ground color of fore wings pale, grayish white to grayish fuscous.
Fascia angulate, entire ..... **tenebrella.**
Fascia interrupted or obsolete.
Fascia oblique, irregular (Pl. VII, fig. 15) ..... **minnicella.**
Fascia transverse, interrupted (Pl. VII, fig. 12) ..... **grisella.**
Ground color of fore wings yellow or ochreous.
Markings distinct.
Without distinct spot in middle of fore wing.
Pale grayish yellow, markings very pronounced, dark brownish fuscous (Pl. VII, fig. 13) ..... **fuscosuffusella.**
Markings less distinct, reddish fuscous.
Ochreous, larger, a dorsal patch at two-fifth .... **ochrocomella.**
Pale canary-yellow; a dash in middle of fold (Pl. VII, fig. 17). **canariella.**
A spot in middle of fore wing (Pl. VII, fig. 16) ... **discopunctella.**
Fore wings without markings, stigmata obsolete.
Fore wings ochreous, hind wings pale, greyish ochreous; larger. **ochreella.**
Both wings pale canary-yellow; size small ..... **Fényesella.**

D. occidentella sp. n. (Pl. VII, fig. 14). Female.—Thorax, abdomen, head and antennal eye-caps dull greyish fuscous. Labial palpi blackish fuscous and very short, terminal joint minute; fore wings narrowed towards the apex equally from both margins; general color steel grey, the scales being black and white in approximately equal proportion; costal half of base tinged with yellowish fuscous; basal two-fifths of wing a little paler than the rest and limited by a narrow, whitish band, straight and at a right angle to the margins, externally this white band is edged by a line of raised, blackish scales; costa from fascia to apex, dark fuscous or blackish; two blackish dots at end of cell; cilia greyish fuscous. Hind wings greyish fuscous, sprinkled with pale scales towards the apex, cilia greyish stramineous. Under side of body creamy white, speckled with pale fuscous. Legs fuscous, middle and hind pair creamy white within. Under side of fore wings dark fuscous, indistinctly sprinkled with paler scales, hind wings a shade paler.

Expanse 10. mm., .40 inch.

Hab.—Kaweah, Cal.

A single female specimen; a distinct species. The raised scales on the fore wings of this species I have not observed in any other of the group. This character, together with the unusually short palpi and the entire fascia of fore wing, make this an aberrant species of the genus.

D. tenebrella sp. n.—General aspect a greyish fuscous, with very little lustre. Head and antennal eye-caps a trifle paler, tinged with ochreous and speckled with pale scales. Labial palpi fuscous, darker and very short in the male, a trifle longer in the female, terminal joint slightly depressed in both sexes. Fore wings brownish fuscous, costa somewhat convex, dark fuscous towards the base; basal space a little paler than rest of wing, limited externally by a darker angulated fascia, the ends of which are at one-third from the base, a clouded space in the fold and anal angle darker; externally, the fascia fades irregularly into the general color of the wing; two somewhat elongate dots at end of cell and a third one below these near end of fold and less distinct; apical part of wing and adjoining cilia thinly sprinkled with white scales; cilia greyish fuscous, hind wings greyish fuscous, cilia greyish stramineous. Under side: body and legs silvery grey, tinged with ochreous, out side of legs fuscous, ends of tarsal joints paler; fore wings brownish fuscous, hind wings silvery gray.

Expanse 12.–13. mm., .48–.52 inch.

Hab.—Hazleton, Pa.

A dull and obscure looking species. Two males and one female in my collection.

D. mimicella sp. n. (Pl. VII, fig. 15).—Thorax silvery grey, with slight ochreous tinge, head and eye-caps greyish fuscous, tinged with ochreous. Male.—Labial palpi ochreous fuscous, terminal joint acuminate. Ground color of fore wings silvery grey, tinged with ochreous towards the base and dusted with brownish fuscous scales; extreme costa dark fuscous, more pronounced towards the base; an irregular, broken, oblique line or fascia extending from one-third of dorsal margin to the middle of the costa, an illdefined costal patch before the fascia, basal space sprinkled with brownish fuscous scales and aggregated into a dash on the fold; apical part more densely overlaid with fuscous and with the adjoining cilia sprinkled with white scales; two short dashes at end of cell, above these an irregular costal dot; apical third of dorsal margin with three equidistant, dark fuscous dots; cilia mouse-grey, hind wings pale greyish fuscous, cilia concolorous, with stramineous tinge. Abdomen above and beneath silvery grey. Under side of thorax and inside of middle and hind legs silvery, with ochreous tinge, rest of legs fuscous brown, mottled with paler; end of tarsal joints indistinctly paler.

Expanse 10. mm., .40 inch.

Hab.—Forsyth, Georgia.

Five males, all with exception of one in poor condition. A distinct species, not closely related to any other. Named in honor of Miss Minnie Jack, who collected the specimen for me.

D. grisella sp. n. (Pl. VII, fig. 12).—Thorax, head and eye-caps greyish fuscous, with ochreous tinge and feeble lustre. Labial palpi (♂ and ♀) ashy grey, terminal joint acuminate, minute, more distinct in the female; antennæ fuscous, with indistinct pale annulations. Ground color of fore wings ashen grey, with brownish markings; extreme costa dark fuscous, more so towards the base; a triangular costal, and on opposite subquadrate dorsal patch at one-third from the base and indistinctly coalescing externally; base more densely dusted, a cloudy patch on the fold within the basal space, the latter extends as a small

triangle between the above mentioned costal and dorsal patches; outer half of wing more densely dusted with brownish fuscous. Stigmata at end of cell very distinct, a short dash immediately below on the fold; a line, not sharply defined, extends obliquely from beginning of costal cilia towards middle of wing before the apex, reflected thence to the dorsal margin; apical part of wing and adjacent cilia sprinkled with white scales. Hind wings and cilia grey. Abdomen above mouse-grey. Under side of body silvery; legs more or less fuscous externally. Fore wings fuscous, hind wings much paler.

Expanse 12.–13. mm., 48.–52. inch.

Hab.—Pa.; Mo.; S. Dak.

Markings of fore wings almost identical with *ochrocomella* and *fuscosuffusella*, from both of which it differs by the different ground color of fore wings. A well-marked specimen in the National Museum collection, No. 743, is without locality label.

D. fuscosuffusella sp. n. (Pl. VII, fig. 13).—Thorax, abdomen above, head and antennal eye-caps pale greyish ochreous, with feeble lustre. Labial palpi ochreous, dusted with fuscous, terminal joint minute, dark fuscous in the male, more distinct and not darker in the female; antennæ fuscous. Fore wings ochreous, with dark fuscous dusting and shadings; costa dark fuscous from the base, an elongate triangular costal patch at one-third; dorso-basal space and a quadrate dorsal patch dark fuscous, the latter a trifle nearer the base than the opposite costal one, both these patches shade off gradually externally; basal space limited externally by a straight line, broken and interrupted in the middle, conspicuously dusted with white scales outwardly, especially before the quadrate basal patch; outer part of wing mottled with paler and while scales, especially in dorsal half of wing; stigmata illdefined; cilia greyish. Hind wings pale greyish, tinged with fuscous, cilia greyish straminеous. Under side: body and middle and hind legs within silvery, tinged with ochreous, rest more or less fuscous; fore wings pale fuscous, hind wings silvery white.

Expanse 10.–11.5 mm., .40–.46 inch.

Hab.—Missouri (St. Louis).

A male and female specimen in my collection.

The white dusting of fore wings less pronounced in the female. Two other specimens in my collection have the outer two thirds of fore wings densely dusted with dark fuscous; costo-dorsal patches not defined, white scale dusting absent. However, do not feel warranted to consider them specifically distinct.

D. ochroecomella Clem.—Ochreous; head, eye-caps, thorax and abdomen above paler. Labial palpi pale ochreous, terminal joint dusted with fuscous, not depressed. Fore wings ochreous, costa and adjoining space brownish fuscous, a small, semi-oval costal spot at two-fifths, and on opposite larger dorsal patch of the same color; apical part of wing and adjacent cilia dusted with brownish and a sprinkling of very small whitish scales; two fuscous dots at end of cell and a short dash immediately below on the fold; cilia pale greyish ochreous. Hind wings pale grey, washed with pale fuscous, cilia greyish straminеous. Under

side; thorax and femora silvery white; abdomen and legs greyish ochreous, spotted with fuscous externally; fore wings fuscous, hind wings greyish fuscous.

Expanse 11. 12. mm., .44-.48 inch.

Hab.—Pa.; Nev.; Tex.; Kan.; N. J.

Closely allied to the preceding species; from *fuscosuffusella* it differs by the costo dorsal patches being equidistant from the base; from *grisella* in difference of coloration. *Dryope murtfeldtella* Clem., the type of the genus, is a synonym.

D. canariella sp. n. (Pl. VII, fig. 17).—Thorax, head and eye-caps ochreous, slightly dusted with pale fuscous. Labial palpi ochreous, terminal joint dark fuscous. Fore wings a pale, sordid yellow, dusted with reddish brown scales; costa towards the base dark fuscous; a dark patch on the fold at two-fifths the wing length, not attaining the dorsal margin, an indistinct whitish band at one-third and angulated externally. Hind wings silver gray; cilia of both wings stramineous. Under side of body and legs cream yellow; abdomen, fore legs, out side of middle and hind legs more or less fuscous; fore wings fuscous, hind wings paler.

Expanse 10. mm., .42 inch.

Hab.—Sonoma Co., Cal.

A male specimen in my collection. Quite distinct. Identified by Lord Walsingham as *P. ochrcella* Clem., but the author of this species describes it "fore wings immaculate."

D. discopunctella sp. n. (Pl. VII, fig. 16).—Greyish ochreous; thorax, patagia, occiput and middle of face, fuscous. Labial palpi transversely striolate with fuscous. Fore wings dusted with fuscous scales more densely along the costa and apical portion, former more so towards the base. At two-fifths of the wing length is an illdefined slightly curved fascia of aggregated darker scales; basal space a trifle paler, with a cloudy patch on the fold; about the middle of the wing is a fuscous dot a little nearer the costa than the dorsal margin; two dots at end of cell; cilia pale grey, dusted at their base with fuscous scales. Hind wings grey, with fuscous dusting, cilia pale grey. Under side: body pale greyish ochreous; fore legs and outer side of middle and hind legs, dusted with fuscous; tarsal joints faintly annulate with pale at their apex; fore wings fuscous, hind wings paler.

Expanse 12. mm., .48 inch.

Hab.—Hazleton, Pa,

A single female specimen. Distinguished from the other species of the group by the fuscous spot of middle of fore wing.

D. ochrcella Clem.—Ochreous; antennæ reddish brown, labial palpi ochreous, dusted with brownish scales; terminal joint pointed, nearly as long as the second in the female. Fore wings dusted with reddish scales, more densely in apical portion; costa reddish fuscous; no other markings. Hind wings and cilia of both wings with ochreous tinge. Under side of body and legs ochreous, the latter and abdomen dusted with reddish fuscous.

Expanse 10.-11. mm., .40-.44 inch.

Hab.—Pa. (Hazleton); Tex.; Alabama; S. Dak.

Distinguished from the preceding species by the absence of wing markings and from the following by its larger size, more ochreous color and darker antennæ.

D. Fényesella sp. n.—Pale sulphur yellow, head a little more ochreous. Antennæ faintly annulate with ochreous. Labial palpi compressed, terminal joint slender, dusted with fuscous. Fore wings bright sulphur yellow, especially in costal half of wing; costa orange red, interrupted at two-fifths, immediately beyond this interruption is a small costal patch; a pale, indistinct, transverse fascia at two-fifths, more distinct in costal half; along the base of the costal cilia the wing is more deeply orange; cilia yellow, thinly sprinkled with orange colored scales. Hind wings and cilia sulphur yellow. Abdomen slightly tinged with reddish. Under side of body and wings ochreous; legs dusted with brownish scales on the out side.

Expanse 7.5 mm., .30 inch.

Hab.—Pomona, Cal.

A male specimen in my collection. Our smallest species. It gives me pleasure to name this species in honor of my friend, Dr. A. Fényes, of Pomona, Cal., who, with many other Microlepidoptera, collected the type of this species for me.

Unrecognized species.

Blastobasis ? aufugella Zell. (Beitrage Zweite Abtheilung, p. 300).

The type is said to be in the collection of the Peabody Acad. Sci., Salem, Mass. Lord Walsingham (Notes on Tineidæ of North America, 1882, p. 190) refers this species to *Pigritia laticapitella*. As I have not seen any form which agreed with the description, as given by Prof. Zeller, and have not as yet had the opportuity to see the type, I shall at this time merely transcribe the original description and trust to the future for an opportunity to see and examine the type.

"Minuta, antennis crassiuseulis, supra articulum basalem squamis ampliatum non excisis; alis ant. cinereis, fascia obscura past strigam albidam leviter fractam, puncto nigro grasso in fascia punctisquo duobus geminatis venæ transversæ nigris; post. lineari-lanceolatis. ♂."

LIST OF SPECIES.

PLOIOPHORA gen. n.

1. P. ampla sp. n.
2. P. fidella sp. n.

PIGRITIA Clem.

1. P. confusella sp. n.
2. P. purpurella sp. n.
3. P. basilorella sp. n.
4. P. laticapitella Clem. (ed. Staint., p. 136).
5. P. mediofasciella sp. n.
6. P. ornatella sp. n.

7. P. angustipennella sp. n.
8. P. tristella sp. n.
9. P. spoliatella sp. n.
10. P. arizonella sp. n.
11. obscurella sp. n.

EPIGRITIA gen. n.

1. E. pallidotinctella sp. n.
2. E. Heidemannella sp. n.

PSEUDOPIGRITIA gen. n.

1. P. dorsomaculella sp. n.
2. P. equitella sp. n.
3. P. fraternella sp. n.
4. P. argyreella sp. n.

DRYOPE Cham.

1. D. occidentalis sp. n.
2. D. tenebrella sp. n.
3. D. minnieella sp. n.
4. D. grisella sp. n.
5. D. fuscosuffusella sp. n.
6. D. ochrocomella Clem. (ed. Stain., p. 332).
   D. murtfeldtella Cham. (Can. Ent., Vol. VI, p. 50).
7. D. canariella sp. n.
8. D. discopunctella sp. n.
9. D. ochreella Clem. (ed. Stain. p. 333)
10. D. Fényesella sp. n.

Unrecognized species.

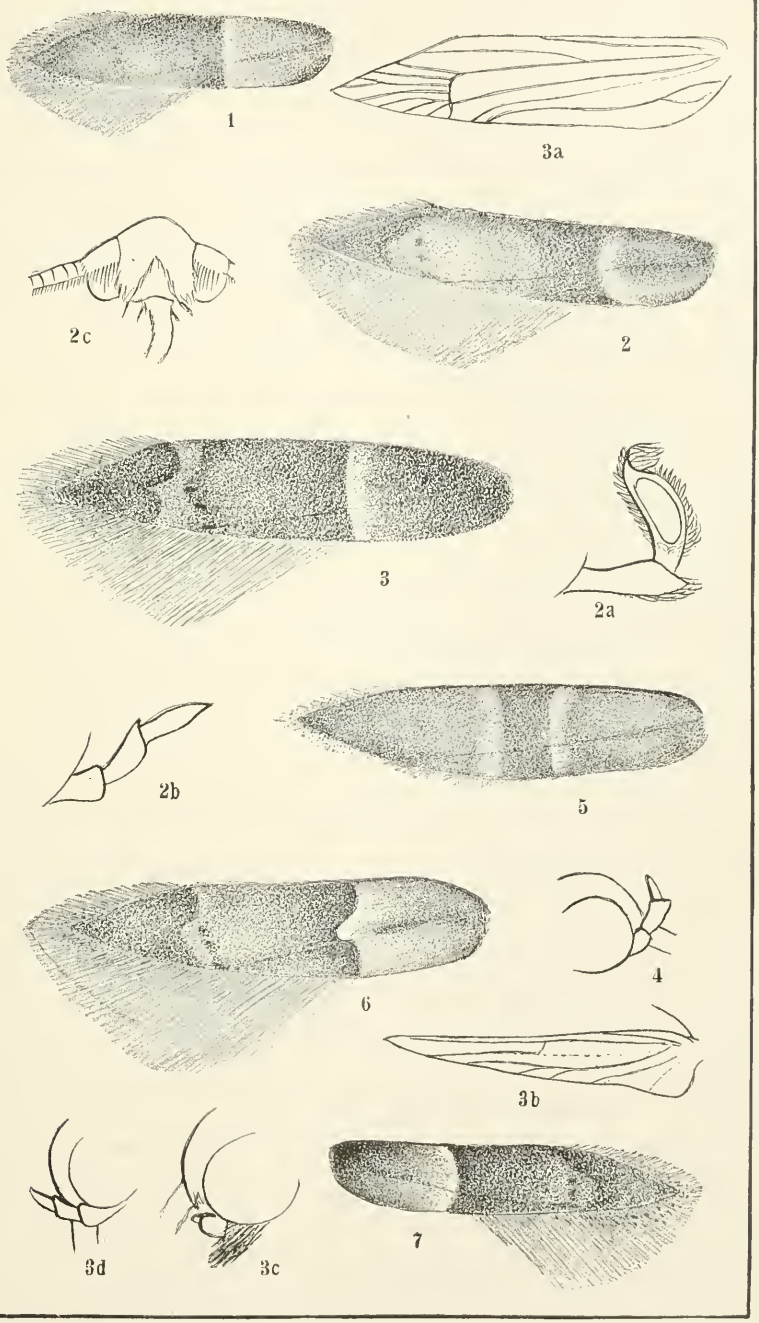
Blastobasis ? aufugella Zell. (Beiträge. Abth., ii, 1873, p. 309).

EXPLANATION OF PLATE VI.

1. Fore wing of *Ploiophora ampla.*
2. " " " *fidella;* 2*a*, labial palpi of ♂; 2*b*, labial palpi of ♀; 2*c*, head of ♂, seen from before, showing frontal fossa.
3. Fore wing of *Pigritia laticapitella;* 3*a*, venation of same; 3*b*, venation of hind wing; 3*c*, labial palpus of ♂; labial palpus of ♀.
4. Labial palpus of *Pigritia confusella.*
5. Fore wing of *Pigritia mediofasciella.*
6. " " " *basilorella.*
7. " " " *ornatella.*

EXPLANATION OF PLATE VII.

8. Fore wing of *Epigritia pallidotinctella*, 8*a*, labial palpus ♂; 8*b*, labial palpus ♀.
9. " " " *Heidemannella.*
10. " " *Pseudopigritia dorsomaculella;* 10*a*, venation of same.
11. " " " *fraternella.*
12. " " *Dryope grisella;* 12*a*, venation; 12*b*, labial palpus of ♂; 12*c*, labial palpus of ♀.
13. Fore wing of *Dryope fuscosuffusella.*
14. " " " *occidentella.*
15. " " " *minnieella.*
16. " " " *discopunctella.*
17. " " " *canariella.*



PIGRITIA (DIETZ).

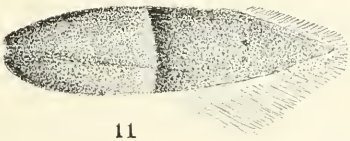
8

8a

8b

10

9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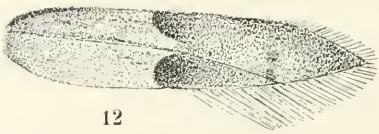
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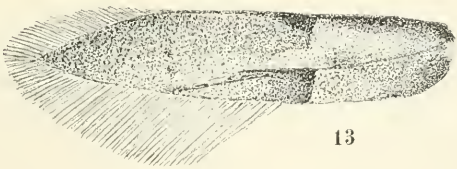
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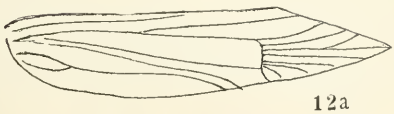
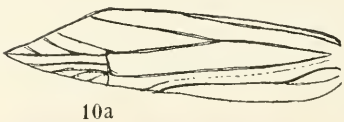
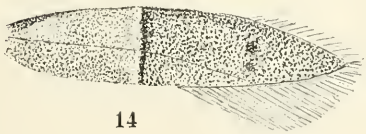
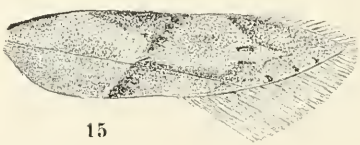
12c

12b


12a


10a


14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PIGRITIA (DIETZ).

A CATALOGUE OF THE DIPTERA OF SOUTH AMERICA.

BY W. D. HUNTER, U. S. EXPERIMENT STATION, AMES, IOWA.

Part II, Homodactyla and Mydiadæ.*

Section Brachycera.

Tribe *Platygena.*

Group **HOMODACTYLA.**

Superfamily NOTACANTHA.

Family STRATIOMYIDÆ.

ACTINA.

Meigen, Klass. i, 117, xxvi, p. 1804.

elegans Schiner, Dipt. Novara. 71.—Chile.

AMPHILECTA.

Brauer, Notacanthen, 1882?

superba Brauer, Zweiflg. K. Mus. Wien., ii, 80, 86. Karsch, Berl. Ent. Zeit., xxviii, 1884, 171.—Brazil.

HETERACANTHIA.

Macq. Dipt. Exot. Suppl., iv, i, 347, 1849.

ruficornis Macq. Dipt. Exot. Suppl. iv, 44, pl. v, f. 2. Schiner, Dipt. Novara, 71.—Colombia.

CHORISOPS.

Rond. Dipt. Exot. 1864, 88.

Philippi Rond. Dipt. Exot. 88.—Chile.

BERIS.

Latreille, Hist. Nat. Crust. Ins. xiv, 340, 1804.

albitarsis Macq. Dipt. Exot. Suppl. i, 175.—Colombia.
cærulescens Schiner, Dipt. Novara 71.—Colombia.
flavispinosa Macq. Dipt. Exot. Suppl. v, 58.—"Amerique meridionale."
Guerinii Macq. Dipt. Exot. Suppl. i, 176, pl. v, f. 4.—"America meridionalis."
longicornis Phil. chil. Dipt. 731.—Chile.
luctifera Phil. chil. Dipt. 729.—Chile.
luteiventris Phil. chil. Dipt. 731.—Chile.
maculipennis Blanch. Gay. Hist. Chil. Zool. vii, 400. Phil. chil. Dipt. 729.—Chile.
mexicana Bellardi, Ditt. Mess. i, 20, pl. i, f. 6. Rond. Dipt. Exot. 87 (*Oplacantha*). Osten Sacken, Cat. 1878; id. Dipt. Biol. C. A. i, 41. Giglio Tos, Ditt. Mess. 1, 4.

* Part I was published in these Transactions, Vol. XXVI, 1900, pp. 260–298.

Beris bellula Will. Trans. Am. Ent. Soc. xv. 245 (Giglio-Tos).—Rio Janeiro, Mexico.
modesta Phil. chil. Dipt. 730.—Chile.
pulchella Will. Trans. Am. Ent. Soc. xv, 245.—Chapada in Brazil.
sexspinosa Macq. Dipt. Exot. Suppl. i, 174, pl. v, f. 1 (*Diphysa*). Osten Sacken, Berl. Ent. Zeit. 1882, 371.—Brazil.
thoracica Phil. chil. Dipt. 730.—Chile.
trichonota Phil. chil. Dipt. 730.—Chile.
tricolor Wied. Auss. zw. Ins. i, 83, 575. Loew, Stett. Ent. Zeit. 1846, 305.—Brazil.
valdiviana (*Olachantha*) Rond. Dipt. Exot. 88.—Chile.
viridiventris Phil. chil. Dipt. 731.—Chile.

HADRESTIA.

Thomson, Dipt. Eugenies Resa, 453, 1868.

ænea Thom. l. c. 454, pl. ix, f. 3. F. Lynch A. Cat. 125 (17).—Patagonia.

EXAIRETA.

Schiner, Dipt. Novara, 71, 1868.

eupodata Bigot, Dipt. Nouv. xvi, 1877, 198.—Chile.
hyacinthina Bigot, Dipt. Nouv. xvi, 1877, 199.—Chile.
longicornis Schiner, Dipt. Novara, 73.—Chile.
Philippi Bigot, Dipt. Nouv. xvi, 1877, 199.—Chile.

SARGUS.

Fabr. Ent. Syst. Suppl. 566, 1798.

armatus Wied. Auss. zw. Ins. ii, 29.
bispinosus Wied. Auss. zw. Ins. ii, 32, pl. vii, f. 6, *a*, *b*.—Brazil.
brasiliensis Wied. Auss. zw. Ins. ii, 37.—Brazil.
clavatus Walk. List v, 93. Bell. Ditt. Mess. i, 41. Osten Sacken, Biol. C. A. Dipt. i, 41.—Para, Mexico.
claviventris Rond. Oss. Esap. Ditt. 190.—Venezuela.
coarctatus Macq. Dipt. Exot. i, 1, 263, pl. xxv, f. 2. Walk. List v, S. i, 92. Will. Tr. Am. Ent. Soc. xv, 249. Giglio-Tos, Ditt. Mess. i, 26.—Brazil, Chile, Mexico.
Falleni Perty, Del. Anim. Art. Bras. 184, pl. xxxvii, f. 1.—Brazil.
fasciatus Fabr. Syst. Antl. 259, 15. Wied. Auss. zw. Ins. ii, 33.—Brazil.
hirticornis Wied. Auss. zw. Ins. ii, 28.—Brazil.
hortulanus Wied. Auss. zw. Ins. ii, 32.—Brazil.
inermis Wied. Auss. zw. Ins. ii, 31, pl. vii, f. 7.—Brazil.
lucens Loew, Centur. vii, 11. Will. Dipt. 299.—St. Vincent, Cuba.
Macquartii Perty, Del. Anim. Art. Bras. 185, pl. xxxvii, f. 2.—Brazil.
macula Fabr. Syst. Antl. 258, 12. Wied. Auss. zw. Ins. ii, 40.—South America.
melleus Rond. Esame Ins. Ditt. Bras. 44.—Brazil.
niger Wied. Zool. Mag. iii, 52, 17; id. Auss. zw. Ins. ii, 28.—Brazil.
notatus Wied. Auss. zw. Ins. ii, 34.—Brazil.
obscurus Wied. Auss. zw. Ins. ii, 35.—Brazil.
petiolatus Macq. Dipt. Exot. i, 1, 206.—Rio Janeiro.
stamineus Fabr. Syst. Antl. 253, 19 (*Scæva staminea*). Wied. Auss. zw. Ins. ii, 39.—South America.

tæniatus Wied. Auss. zw. Ins. ii, 37.—Brazil.

testaceus Fabr. Ent. Syst. iv, 338, 109 (*Musca elongata*); id. Syst. Antl. 257, 6. Wied. Auss. zw. Ins. ii, 356. Macq. Dipt. Exot. i, 1, 205. Rond. Esame Ditt. Bras. 43.—Brazil.

thoracicus Macq. Hist. Nat. Dipt. i, 260. Will. Trans. Am. Ent. Soc. xv, 248.—Chapada in Brazil; South America.

violaceus Jaennicke, Exot. Dipt. 326.—Brazil.

ACHROCÆTA.

Wied. Auss. zw. Ins. ii; 42, 1830.

elegans Perty, Del. Anim. Art. Bras. 184, pl. xxxvi, f. 15.—Brazil.

fasciata Wied. Auss. zw. Ins. ii, 42, pl. ix, f. 3. Macq. Dipt. Exot. i, 260. Walk. List v, Suppl. i, 68. Loew, Verh. Zool. Bot. Ges. 1855, 147. Giglio-Tos, Ditt. Mess. 1, 16.—Brazil, Mexico.

MACROSARGUS.

Bigot, Ann. Ent. Soc. Fr. 1877 (Dipt. Nouv. xvi, 225, n. n. pro. *Pedicella* Bigot, Ann. Soc. Ent. Fr. 1856, 63.

ruflbasis Bigot, Dipt. Nouv. xvi, 225.—America meridionalis.

tenuiventris Bigot, Dipt. Nouv. xvi, 1877, 225.—"Amazonia."

PTECTICUS.

Loew, Verh. Zool. Bot. Ges. 1855.

affinis Schiner Dipt. Novara 65. Will. Tr. Am. Ent. Soc. xv, 248.—S. America. Chapada in Brazil.

conopsoides Schiner, Dipt. Novara 66.—Colombia.

illustris Schiner, Dipt. Novara 64.

tenuis Schiner, Dipt. Novara 66.—Colombia.

testaceus Fabr. Syst. Antl. 257, 6 (*Sargus*). Wied. Auss. zw. Ins. ii, 35, 15 (*Sargus*). Macq. Dipt. Exot. i, 1, 203; id. Suppl. i, 57. Bellardi, Ditt. Mess. i, 45. Rond. Studi Ent. i, 103. Walk. List iii, 517, v, 91. Schiner, Dipt. Novara 64. Osten Sacken, Dipt. Biol. C. A. i, 42. F. Lynch A. Cat. 125 (17). Giglio-Tos, Ditt. Mess. i, 23. Wulp, Tijdschr. Ent. 1882, 156.—Brazil, Guiana, America meridionalis, Mexico, Africa ?

HOPLISTES.

Macq. Suit. Buff. 1855.

bispinosus Macq. Dipt. Exot. i, 1, 199, pl. xxiii, f. 2.—Brazil.

hortulanus Wied. Auss. zw. Ins. ii, 32 (*Sargus*). Schiner, Dipt. Novara 70. Will. Tr. Am. Ent. Soc. xv, 251.—Rio Janeiro.

RAPHIOCERA.

Macq. Suit. Buff. 1834.

armata Wied. Auss. zw. Ins. i, 1, 29 (*Sargus*). Macq. Dipt. Exot. i, 1, 200, pl. xxiv, f. 2; id. Suppl. i, 182. Schiner, Dipt. Novara 70. Will. Tr. Am. Ent. Soc. xv, 251.—Brazil.

mipartita Macq. Dipt. Exot. Suppl. i, 182, pl. vi, f. 1.—Colombia.

ornata Macq. Dipt. Exot. Suppl. i, 183, pl. vi, f. 2.—New Granada.

BASENTIDEMA.

Macq. Dipt. Exot. Suppl. i, 1, 201, 1838.

syrphoides Macq. Dipt. Exot. Suppl., i, 1, 201, pl. xxiv, f. 3.—Brazil.

RHINGIOPSIS.

Roeder, Ent. Nach. xii, 137, 1886.

rostrata Wied. Auss. zw. Ins. ii, 68 (*Stratiomys*). Macq. Dipt. i, 249; id. Dipt. Exot. i, 1, 186, pl. xxii, f. 4*a*, *b* (*Odontomyia*). Will. Tr. Am. Ent. Soc. xv, 255.—Brazil.

tau Roeder, Ent. Nach. xii, 138.—Rio Janeiro.

HISTIODROMA.

Schiner, Dipt. Novara 68, 1868.

inermis Wied. Auss. zw. Ins. ii, 31 (*Sargus*), pl. vii, f. 7. Schiner, Dipt. Novara 70. Will. Tr. Am. Ent. Soc. xv, 251.—Rio Janeiro.

CACOSIS.

Walker, Ins. Saund. ii, 83, 1851.

grandis Schiner, Dipt. Novara 67.—South America.

nigra Wied. Zool. Mag. iii, 52, 17; id. Auss. zw. Ins. ii, 28 (*Sargus*). Walker, Dipt. Saund. ii, 84, pl. iii, f. 1. Schiner, Dipt. Novara 67. Will. Tr. Am. Ent. Soc. xv, 248.—Rio Janeiro.

CHRYSOCHLORA.

Latreille, Fam. Nat. 1825. Macq. Dipt. Exot. i, 1, 198. Loew Verh. Zool. Bot. Ges. 1855.

castanea Macq. Dipt. Exot. i, 1, 202, pl. xxv, f. 1. Rond. Esame Ins. Bras. 43.—Guina, Brazil.

maculiventris Rond. Oss. Esap. Ditt. 190.—Venezuela.

pluricolor Bigot, Dipt. Nouv. xvi, 1877, 209.—Brazil.

similis Macq. Dipt. Exot. Suppl. v, 64.—"Amerique meridionale."

vespertilio Fabr. Syst. Antl. 259, 14 (*Sargus*). Wied. Auss. zw. Ins. ii, 29 (*Sargus*). Schiner, Dipt. Novara 67. Will. Trans. Am. Ent. Soc. xv, 246.—Brazil.

sp. Will. Tr. Am. Ent. Soc. xv, 247.—Brazil.

PELAGOMYIA.

Will. Manual N. A. Dipt. 48, 1896.

albitalus Will. Dipt. St. Vincent, 299, pl. x, f. 75.—St. Vincent.

CHRYSONOTOMYIA.

Nom. nov. for *Chrysonotus* Loew Verh. Zool. Bot. Ges. 1855, preoccupied by Swainson, Nat. Hist. and Classification of Birds, 1837.

analis Will. Tr. Am. Ent. Soc. xv, 251, Giglio Tos, Ditt. Mess. i, 24.—Chapada in Brazil, Mexico.

dichrous Schiner, Dipt. Novara 62.—Columbia.

fulvithorax Bigot, Dipt. Nouv. xvi, 1877, 228.—Amazonia.

splendens Schiner, Dipt. Novara 62.—South America.

MEROSARGUS.

Loew, Verh. Zool. Bot. Ges. 1855.

antennatus Schiner, Dipt. Novara 63.—South America.

bituberculatus Schiner, Dipt. Novara 64.—South America.

cingulatus Schiner, Dipt. Novara 62. Giglio-Tos, Ditt. Mess. i, 18.

? *Sœva staminea* Fabr. Syst. Antl. 253, 19 (Giglio-Tos).

? *Sargus stamineus* Wied. Auss. zw. Ins. ii, 39 (Giglio-Tos).

Sargus stamineus Walk. List iii, 517, et v, S. i, 92. Bell. Ditt. Mess. i, 44, 8. —South America.

festiva Will. Tr. Am. Ent. Soc. xv, 250.—Rio Janeiro.

frontatus Schiner, Dipt. Novara 63.—Colombia.

gracilis Will. Tr. Am. Ent. Soc. xv, 249.—Chapada in Brazil.

DICRANOPHORA.

Macq. Suit. Buff. 1834.

affinis Will. Tr. Am. Ent. Soc. xv, 251.—Rio Janeiro.

astuta Will. Trans. Am. Ent. Soc. xv, 250.—Brazil.

furcifer Wied. Anal. Ent. 31, 40, f. 10; id. Auss. zw. Ins. ii, 38, pl. vii, f. 5. Macq. Dipt. Exot. i, 1, 199; id. Suppl. ii, 1, 47.—Rio Janeiro.

picta Macq. Hist. Nat. Dipt. i, 255; id. Dipt. Exot. i, 1, 196, pl. xxiv, f. 1. Will. Tr. Am. Ent. Soc. xv, 250.—Brazil.

HERMETIA.

Latreille, Hist. Nat. Crust. et Ins. xiv, 338, 1804.

albitarsis Fabr. Syst. Antl. 63, 4. Wied. Auss. zw. Ins. ii, 24, pl. vii, f. 4. Macq. Dipt. Exot. Suppl. i, 177. Schiner, Dipt. Novara 70. Rondani, Esame Ditt. Bras. 40. Will. Tr. Am. Ent. Soc. xv. 246.

? *Hermetia bimaculata* Macq. Hist. Nat. Dipt. (Will.).

? *Hermetia sexmaculata* Macq. Hist. Nat. Dipt. (Will.).

Hermetia planifrons Macq. Dipt. Exot. Suppl. i, 50.

—South America, Columbia, Yucatan.

apicalis Wied. Auss. zw. Ins. ii, 25. Schiner, Dipt. Novara 70. Will. Tr. Am. Ent. Soc. xv,,246.—South America, Chapada in Brazil.

ceriogaster Will. Tr. Am. Ent. Soc. xv. 246.—Chapada in Brazil.

coarctata Macq. Dipt. Exot. Suppl. i, 50, 2. Bellardi, Ditt. Mess. i, 24. Schiner, Dipt. Novara 70. O. Sacken, Dipt. Biol. C. A. i, 32.—South America, Mexico.

flavipes Wied. Auss. zw. Ins. ii, 26. Walk. List v, S. i, 21, et 304. Giglio-Tos, Ditt. Mess. i, 11.

Sargus (*Chrysochlora*) *andreas* Walk. List iii, 515, et, Suppl. i, 304 (Giglio-Tos).

Chrysochlora andreas Walk. List v, S. i, 68.

—Brazil, Mexico.

geniculata Macq. Dipt. Exot. Suppl. v, 61, pl. i, f. 9.—"Amerique meridionale."

illucens Linn. Syst. Nat. ii, 979, 2 (*Musca illucens* et *leucopa*). De Geer, Ins. vi. 205, 3, pl. xxix, f. 8 (*Nemotelus*). Fabr. Mant. Ins. ii, 327, 2 (*Bibio*); id. Ent. Syst. iv, 253, 2 (*Mydas*); id. Syst. Antl. 62, 1 (*Hermetia*). Latreille, Dipt. Host. Nat. xxiv, 194, 54; id. Hist. Nat. Crust. et. Ins. xiv. 338; id. Gen. Crust. et. Ins. iv, 271. Lamarck, Hist. Anim. sans Vert. iii, 355, 2 (*Xylophagus*). Wied. Auss. zw. Ins. ii, 22, 1, pl. vii, f. 3. Guerin

et Percheron Gen. Dipt. pl. iv. Macq. Hist. Nat. Dipt. i, 228; id. Dipt. Exot. i, 1, 177, pl. xxi, f. 2. Rond. Dipt. Oscul. 17. Schiner, Dipt. Novara 70. Bigot R. de la Sagra, 799. Bellardi, Saggio, i, 26. Osten Sacken, Cat. 1878, 46; id. Dipt. Biol. C. A. i, 32. Will. Tr. Am. Ent. Soc. xv, 242; Dipt. St. Vincent 299. F. Lynch A. Cat. 126 (18). Weyenbergh, Apuntes anat. y biol. sobre gen. *Hermetia*, Period. Zool. i, 264–275, pl. iv, v.—New York, Mexico, Central America, St. Vincent, Rio Janeiro, Buenos Aires.

pulchra Wied. Auss. zw. Ins. ii, 24.—Surinam.

rufitarsis Macq. Dipt. Exot. Suppl. i, 177.—Colombia.

rufiventris Fabr. Syst. Antl. 63, 2. Wied. Auss. zw. Ins. ii, 23. Rond. Esame Ditt. Bras. 4. Walk. List v, 21. F. Lynch A. Cat. 126 (18). Wulp, Tijdschr. Ent. xxiv, 154.—Bahia, Argentina.

scutellata Macq. Ditt. Exot. Suppl. v, 61.—South America.

varipennis Bigot, Dipt. Nouv. xvi, 1877, 202.—Brazil.

ODONTOMYIA.

Meigen, Klass. i, 128, 1804.

altifrons Wulp, Tijdschr. Ent. xxxi, 363.—Argentina.

anchorata Bigot, Dipt. Nouv. xvi, 1877, 216.—Chile.

araneifera Schiner, Dipt. Novara, 58.—Chile.

brevifacies Macq. Dipt. Exot. Suppl. v, 63.—South America.

bucephala Gerst. Exot. Strat. 326 (*Stratiomyia*). F. Lynch A. Cat. 127 (19).—Montevideo.

chloraspis Wied. Auss. zw. Ins. ii, 68, 12. Schiner, Dipt. Novara 58.—Colombia.

clypeata Bigot, Dipt. Nouv. xvi, 1877, 215.—Amazonia.

cruciata Macq. Dipt. Exot. i, 1, 192. Blanch. Gay. Hist. Chil. Zool. vii, 402. Phil. chil. Dipt. 732. Schiner, Dipt. Novara 58.—Chile.

elegans Macq. Dipt. Exot. i, 1, 191. Blanch. Gay. Hist. Chil. Zool. vii, 401. Phil. chil. Dipt. 732.—Chile.

fascifrons Macq. Dipt. Exot. Suppl. iv, 1, 354, pl. iii, f. 6. Phil. chil. Dipt. 732.—Chile.

fenestrata Thom. Dipt. Eug. Resa, 455. F. Lynch A. Cat. 127 (19).—Buenos Aires.

foveifrons Thom. Dipt. Eug. Resa 458.—Rio Janeiro.

heteroneura Macq. Dipt. Exot. i, 1, 190, pl. xxii, f. 3.—Brazil.

inermis Wied. Auss. zw. Ins. ii, 71 (*Stratiomyia*). Gerst. Exot. Strat. 330. E. Lynch A. Cat. 127 (9).—Montevideo, Buenos Aires, Cassapawa.

limbipennis Macq. Dipt. Exot. Suppl. ii, 1, 46.—"America."

maculifrons Wulp, Tijdschr. Ent. xxxi, 364.—Cordoba in Argentina.

nidiceps Wulp, Tijdschr. Ent. xxxi, 365.—Cordoba in Argentina.

obscuripes Thom. Dipt. Eug. Resa 457.—Puna.

pachycephala Schiner, Dipt. Novara 60.—Colombia.

pachyceps Bigot, Dipt. Nouv. xvi, 1877, 215.—Para.

pallidiventris Macq. Dipt. Exot. Suppl. i, 181.—Brazil.

peruviana Macq. Dipt. Exot. Suppl. v, 63.—Peru.

pulchra Wied. Anal. Ent. 28, 32; id. Auss. zw. Ins. ii, 65, 6. Macq. Dipt. Exot. i, 1, 190. Walk. List v, 46. Gerst. Linn. Ent. xi, 320 et 324. Schiner, Dipt. Novara 57. F. Lynch A. Cat. 127 (19).—S. America, Brazil.

stigmaticalis Thom. Dipt. Eug. Resa 457.—Puna.
vittata Macq. Dipt. Exot. Suppl. iv. 1, 357.—Brazil.
sp. Will. Tr. Am. Ent. Soc. xv, 256.—Brazil.

BLASTOCERA.

Gerstaecker, Linn. Ent. 1856.

speciosa Gerstaecker, Linn. Ent. xi, 342. Will. Tr. Am. Ent. Soc. xv, 257.—Brazil.

SPYRIDOPA.

Gerstaecker, Linn. Ent. 1856, 344.

tarsalis Gerst. Exot. Strat. 345.—Brazil.

PANACRIS.

Gerstaecker, Linn. Ent. 1856.

lucida Gerstaecker, Linn. Ent. xi, 347. Will. Tr. Am. Ent. Soc. xv, 257.—Cayenne, Chapada.

LASIOPA.

Brullé, Exp. Moreé iii, p. 307, 1832.

Cyclogaster Macq. Suit. Buff. 1834 (Schiner).
atrata Fabr. (*Stratiomys*). Macq. Dipt. Exot. i, 1, 197 (*Cyclogaster*).—S. America.
Paulseni Phil. chil. Dipt. 732 (*Cyclogaster*).—Chile.
rubriceps Phil. chil. Dipt. 732 (*Cyclogaster*).—Chile.
vittata Wulp, Tijdschr. Ent. xxiv, 155.—Argentina.

CYANAUGES.

Philippi, chil. Dipt. 732, 1865.

valdivianus Phil. chil. Dipt. 732.—Chile.
ruficornis Schiner, Dipt. Novara 54.—Chile.

MICROCHRYSA.

Loew, Verh. Zool. Bot. Ges. 1855.

bicolor Wied. Auss. zw. Ins. ii, 41, 28 (*Sargus*). Schiner, Dipt. Novara 61.
Chrysomia rufiventris Macq. Suit. Buff. Dipt. i, 264, 5 (Schiner).—S. America.
dispar Schiner, Dipt. Novara 61.—South America.

CÆNACANTHA.

Wulp, Notes, Leyden Mus. vol. vii, note, xiv, 58.

bipartita Wulp l. c. 59.—Bogota.

STRATIOMYIA.

Stratiomys Geoffroy Hist. Nat. Ins. 11, 475, 1764.
Stratiomys amended Loew, Centur. v, 4, V. Johnson, Tr. Ent. Soc. xxii, 227.
chloraspis Wied. Auss. zw. Ins. ii, 68.—Brazil.
conica Fabr. Syst. Antl. 81, 16. Wied. Auss. zw. Ins. ii, 67.—S. America.
connexa Wulp, Tijdschr. Ent. xxiv, 154.—Argentina.
cuprina Wied. Auss. zw. Ins. ii, 69.—Brazil.
dorsalis Fabr. Syst. Antl. 82, 20. Wied. Auss. zw. Ins. ii, 66.—S. America.
fascipennis Fabr. Syst. Antl. 84, 26. Wied. Auss. zw. Ins, ii, 75.—S. America.
festiva Walk. List S. 1, 46, 63. Schiner, Dipt. Novara 61.—Colombia.
4-lineata Macq. Hist. Nat. Dipt. i, 248. Gerst. Exot. Strat. 325.—Colombia.

leucopsis Wied. Auss. zw. Ins. 74.—Brazil.

lineata Fabr. Syst. Antl. 83, 22. Wied. Auss. zw. Ins. ii, 70.—S. America.

longifrons Rond. Esame Ins. Bras. 41.—Brazil.

melanopsis Wied. Auss. zw. Ins. ii, 70.—Brazil.

mutabilis Fabr. Ent. Syst. iv, 266; id. Syst. Antl. 81. Wied. Auss. zw. Ins. ii, 63, pl. iv, f. 6. Perty Anim. Art. Bras. 184, pl. xxxvi, f. 14. Walk. List v, 42, 61. Gerst. Linn. Ent. xi, 321. Bellardi, Ditt. Mess. i, 30. Schiner, Dipt. Novara 61. Wulp Tijdschr. Ent. xxiv, 154. O. Sacken, Biol. C. A. Dipt. i, 37. Will. Tr. Am. Ent. Soc. xv, 256. Johnson, Tr. Am. Ent. Soc. xxii, 243, pl. iv, f. 3.

Stratiomys fasciata Fabr. Ent. Syst. iv, 266; id. Syst. Antl. 81 (male).

Acrochaeta aleus Walk. List iii, 526; v. 41.

Stratiomys subalba Walk. List v, 41, 43.

? *Stratiomys subalba* (Walk.) Bellardi, Ditt. Mess. i, 31. Osten Sacken, Biol. C. A. Dipt. i, 37.

Stratiomys sericeiventris Rond. Ditt. Bras. 102 (F. Lynch A.).—Mexico, Central America, Corumba, Chapada, Caracas, Argentina.

pallipes Fabr. Ent. Syst. iv. 265, 12; id. Syst. Antl. 81, 93. Wied. Auss. zw. Ins. ii, 76.—S. America ?

pellucida Rond. Esame Ditt. Bras. 41.—Brazil.

princeps Gerst. Exot. Strat. 321, pl. iii, f. 1.—Surinam.

pulchra Wied. Anal. Ent. 28, 32; id. Auss. zw. Ins. ii, 65, pl. viii, f. 5. *a*, *b*. Gerst. Exot. Strat. 324.—Brazil.

rostrata Wied. Auss. zw. Ins. ii, 68. Gerst. Exot. Strat. 329.

Odontomyia rostrata Macq. Dipt. Exot. i, 1, 186 (Gerstaecker).—Brazil.

velutina Bigot, Dipt. Nouv. xvi, 1877, 213.—Chile.

virens Wied. Auss. zw. Ins. ii, 73.—Brazil.

AOCHLETUS.

Osten Sacken, Biol. C. A. Dipt. i, 38, 1886.

bistriatus Will. Dipt. St. Vincent 300, pl. x, 76.—St. Vincent.

CYPHOMYIA.

Wied. Zool. Mag. i, 3, 55, 1819; id. Anal. Ent. 1824. Gerstaecker, Linn. Ent. xi, 263.

affinis Gerstaecker, Exot. Strat. 289.—Venezuela.

* albitarsis Fabr. Syst. Antl. 80, 12 (*Stratiomys*). Gerst. Linn. Ent. xi, 300, 18. Bellardi, Ditt. Mess. i, 22, 2. Schiner, Dipt. Novara 53. Osten Sacken, Biol. C. A. Dipt. i, 49., Giglio-Tos, Ditt. Mess. i, 9.

Cyphoma fenestrata Macq. Dipt. Exot. Suppl. i, 16, 5 (Schiner). Walk. List v, S. i, 16.—S. America, Colombia, Venezuela, Mexico.

auriflamma Hgg. Wied. Zool. Mag. i, 3, 54; id. Auss. zw. Ins. ii, 54, pl. viii, f. 1. Macq. Suit. Buff. Dipt. i, 242, 2. Blanch. Hist. Nat. Anim Art. iv, 593; id. in Cuvier's Reg. An. ed. Mass. pl. 172, bis, f. 5. Guer. Icon. Ins. 544, pl. 98, f. 5. Walk. List v, 18. Gerst. Linn. Ent. xi, 276, pl. in f. 12. Bell. Ditt. Mess. i. 21. Bigot, Ann. Soc. Ent. Fr. 1875, 484. Osten Sacken, Cat. 1878, 49; id. Biol. C. A. Dipt. i, 45. Will. Tr. Am. Ent. Soc. xv, 258. F. Lynch A. Cat. 129 (21).

* Osten Sacken (Biol. C. A. Dipt. i, 35) states that the *C. albitarsis* Fabr. of Bellardi (Ditt. Mess. i, 22) is perhaps a different species.

Cyphomyia chrysodota Perty, An. Bras. 184, pl. xxxvi, f. 14 (Gerst.).

Cyphomyia cyanea Macq. S. B. Dipt. i, 242, pl. vi, f. 3 (Gerst.).—Brazil, Montevideo, Guiana, Mexico.

aurifrons Wied. Auss. zw. Ins. ii, 56. Walk. List v, 18. Gerst. Exot. Strat. 280.

Cyphomyia auriflamma Wied. Anal. Ent. f. 4 (female); id. Auss. zw. Ins. ii, 54, 1 (ex mare), pl. viii, f. 1*b* (female), Gerst.—Brazil.

claripennis Macq. Dipt. Exot. Suppl. ii, 1, 45. Gerst. Exot. Strat. 299.—Brazil.

costalis Walk. Tr. Linn. Soc. Lond. xvii, 341. Gerst. Exot. Strat. 299.—Brazil.

cyanocephala Gerst. Exot. Strat. 274.—S. America.

cyanea Fabr. Ent. Syst. iv, 265, 11 (*Stratiomys*). Coquebert, Ill. 100. pl. 23, f. 4. Fabr. Syst. Antl. 80, 11 (*Stratiomys*). Wied. Auss. zw. Ins. ii, 57. Rond. Esame Ditt. Bras. 40. Gerst. Exot. Strat. 284.—Cayenne, Brazil.

cyanispinis Bigot, Dipt. Nouv. vii, 1874, 487. Amazonia.

dispar Schiner, Dipt. Novara 54.—Colombia.

fascipes Walk. List v, 17. Gerst. Exot. Strat. 311.—Brazil, Santarem.

flavimana Gerst. Exot. Strat. 291. Brazil.

geniculata Gerst. Exot. Strat. 290.—New Granada.

gracilicornis Gerst. Exot. Strat. 295.—Brazil.

hybrida Gerst. Exot. Strat. 307.—Rio Janeiro.

lanuginosa Gerst. Exot. Strat. 296,—Brazil.

lasiophthalma Will. Dipt. St. Vincent 301.—St, Vincent.

leucocephala Wied. Zool. Mag. iii, 55, 22; id. Auss. zw. Ins. ii, 55. Macq. Dipt. Exot. i, 1, 179. Walk. List v, 16.

Clitellaria albicaput Walk. List iii, 521 (female).—Brazil.

maculata Fabr. Syst. Antl. 85, 30 (*Stratiomys*). Wied. Auss. zw. Ins. ii, 57. Gerst. Exot. Strat. 308.—S. America, Essequibo.

ornata Walk. Zool viii, app. xcvi; id. List v, 19. Gerst. Exot. Strat. 299.—Para.

picta Schiner, Dipt. Novara 53.—S. America.

varipes Gerst. Linn. Ent. xi, 283. Schiner, Dipt. Novara 53. Osten Sacken, Biol. C. A. Dipt. i, 34.—Colombia, Venezuela, Central America, Mexico.

verticalis Gerst. Linn. Ent. xi, 287. Schiner, Dipt. Novara 53.

Cyphomyia cyanea Wied. Auss. zw. Ins. ii, 57 (female) Gerst.—S. America.

violacea Macq. Dipt. Exot. Suppl. v. 60. Gerst. Exot. Strat. 290.—Brazil.

Wiedemanni Gerst. Linn. Ent. xi, 302, 19. Schiner, Dipt. Novara 53. Bigot, Ann. Soc. Ent. Fr. 1875, 486. F. Lynch A. Cat. 129 (21).

Cyphomyia albitarsis Wied. Anal. Ent. 13; id. Auss. zw. Ins. ii, 56, 5, pl. viii, f. 2. Macq. Dipt. Exot. i, 1, 172. Walk. List v, 16 (Gerstaecker et Schiner).

Cyphomyia flavispinis Macq. Dipt. Exot. Suppl. v, 40, 6 (Gerst. et Schiner).—S. America, Brazil, Cayenne, Surinam, Venezuela.

sp. Will. Tr. Am. Ent. Soc. xv, 257.—Brazil.

ACANTHINOMYIA.

Nom. nov. for *Acanthina*. Wied. Auss. zw. Ins. ii, 50, 1830, preoccupied by Fischer Moll. 1806,

aurata Macq. Dipt. Exot. Suppl. i, 179, pl. v, f. 6. Bigot, Dipt. Nouv. xvi, 1877. 207.—Colombia.

elongata Wied. Anal. Ent. 30, 37 (*Clitellaria*); id. Auss. zw Ins. ii, 52, pl. vii, f. 9. Schiner, Dipt. Novara 52.—S. America.

hieroglyphica Wied. Auss. zw. Ins. ii, 50.—Brazil.

longa Wied. Auss. zw. Ins. ii, 51.—Brazil.
marmorata Gerst. Exot. Strat. 337.—Brazil.
ornata Macq. Dipt. Exot. i, 179, pl. v, f. 5.—Colombia.

CHORDONOTA.
Gerstaecker, Linn. Ent. 1857.

inermis Wied. Auss. zw. Ins. ii, 55 (*Cyphomyia*). Macq. Dipt. Hist. Nat. i, 242 (*Cyphomyia*). Walk. List v, 16. Gerst. Exot. Strat. 312.—Brazil.
leiophthalma Will. Dipt. St. Vincent, 302.—St. Vincent.
nigra Will. Tr. Am. Ent. Soc. xv, 255.—Brazil.

CLITELLARIA.
Meigen, Illiger's Mag. ii, 265, 1803.

atrata Fabr. Syst. Antl. 83, 23 (*Stratiomys*). Wied. Auss. zw. Ins. ii, 49, pl. vii, f. 10.—S. America.

NEMOTETUS.
Geoffroy, Hist. Nat. Ins. ii, 542, 1764.

fasciatifrons F. Lynch A. Exped. Rio Negro Zool. 89, 43; id. Stett. Ent. Zeit. 1881, 190; id. Cat. 130 (22). Berg, Stett. Ent. Zeit. 1881, 45.—Argentina, Buenos Aires.
niger Bigot, Dipt. Nouv. xvi, 1877, 233.—Chile.
ruficornis Bigot, Dipt. Nouv. xvi, 1877, 234.—Chile.
singularis Macq. Dipt. Exot. Suppl. i, 185, pl. vi, f. 4.—Colombia.

EURYNEURA.
Schiner, Dipt. Novara, 56, 1868.

elegans Will. Tr. Am. Ent. Soc. xv, 252.—Brazil.
fascipennis Fabr. Syst. Antl. 84, 25 (*Stratiomys*). Wied. Auss. zw. Ins. ii, 75 (ibid). Schiner Dipt. Novara 57.—S. America.
nasica Will. Tr. Am. Ent. Soc. xv, 252.—Brazil.
propinqua Schiner, Dipt. Novara 57. Giglio-Tos, Ditt. Mess. i, 15.—Colombia, Mexico.

PROMERANISA.
Walk. List v, 1854.

cylindricornis Will. Tr. Am. Ent. Soc. xv, 253.—Brazil.
nasuta Macq. Dipt. Exot. Suppl. iv, 351, pl. iii, f. 4 (*Stratiomia*). Will. Tr. Am. Ent. Soc. xv, 253.—Chile, Brazil.

MELANOCHROA.
Schiner, Vide Roeder, Ent. Nach. 1886, 139.

dubia Roeder, Ent. Nach. xii, 140. Will. Tr. Am. Ent. Soc. xv, 254. Brazil.

MYXOSARGUS.
Brauer, Notacanthen, 1882? Roeder Ent. Nach. 1886, 139.
Braueri Will. Tr. Am. Ent. Soc. xv, 254.—Brazil.

PACHYGASTER.
Meigen, Illiger's Mag. ii, 266, 1803.

? sp. Will. Dipt. St. Vincent 302.—St. Vincent.

Walker's Species.

Acanthina convexa Walk. List v. 304.—Santarem in Brazil.
" *plana* Walk. List v, 305.—Santarem in Brazil.
Acrochæta breviseta Walk. List v. 69.—Para.
" *longiseta* Walk. List v, 69.—Para.
Chrysochlora plana Walk Dipt. Saund. ii, 82.—Colombia.
" ? *tincta* Walk. Dipt. Saund. ii, 82.—Colombia.
Clitellaria albicaput Walk. List iii, 521.—Para.
" *scutellaris* Walk. List v, 313.—Santarem in Brazil.
Cyclotelus lætus Walk. Dipt. Saund. i, 6.—So. America.
" *nigroflamma* Walk. Dipt. Saund. i, 4.—So. America.
" *pruinosus* Walk. Dipt. Saund. i, 5, pl. i, f. 4.—So. America.
" *socius* Walk. Dipt. Saund. i, 6.—So. America.

These species properly belong to the Therevidæ. *Cyclotelus* = *Agapophytus* Gner. (Schiner).

Cyphomyia costalis Walk. Tr. Linn. Soc. xvii, 341.—Brazil.
" *fascipes* Walk. List v, 17, 303.—Santarem in Brazil.
Hermetia fulva Walk. List v, 22.—Para.
Metabasis rostratus Walk. Dipt. Saund. ii, 81.—Brazil.
Nonacris transequa Walk. Dipt. Saund. i, 7.—So. America.
Odontomyia aterrima Walk. Dipt. Saund. ii, 78.—Brazil.
" *histrio* Walk. Dipt. Saund. ii, 77.—Brazil.
" *vittata* Walk. List v, 303.—Santarem in Brazil.
Sargus contractus Walk. List v, 319.—Santarem in Brazil.
" *echemon* Walk. List iii, 515.—Para.
" *haterius* Walk. List iii, 516.
" *opulentus* Walk. List v, 319.—Para.
Stratiomyia festiva Walk. List i, 43.
" *subcuprata* Walk. List v, 47.—Santarem in Brazil.

The following species have been described by various writers from unknown localities. Doubtless some of them are South American:

Beris servillei Macq. Dipt. Exot. i, 1, 176, pl. 21, f. 1.
Biastes indicus Walk. Dipt. Saund. ii, 81, pl. iii, f. 3.
Clitellaria amenides Walk. List iii, 523.
" *coprates* Walk. List iii, 523.
" *rufa* Walk. List iii, 524.
Dimassus divisus Walk. Dipt. Saund. i, 3. Is a Therevid (Schiner).
Inops despectus Walk. Dipt. Saund. i, 2, pl. i, f. 7.
Nemotelus advena Walk. Dipt. Saund. ii, 80.
Odontomyia excocta Walk. Dipt. Saund. ii, 78.
" *exul* Walk. Dipt. Saund. ii, 79.
" *fuscipennis* Macq. Dipt. Exot. i, 1, 194.
" *lutatius* Walk. List. iii, 532.
Ptilocera lateralis Macq. Dipt. Exot. Suppl. i, 176.
Sargus analis Macq. Dipt. Exot. i, 1, 208.
" *andreas* Walk. List iii, 515.
" *annulipes* Walk. List iii, 515.
" *hoplistes* Wied. Auss. zw. Ins. ii, 30.

Family XYLOPHAGIDÆ.

HETEROSTOMUS.*

Bigot, Ann. Soc. Ent. Fr. Ser. iii, vol. 5, p. 287, 1857.

curvipalpis Bigot, l. c. 285. Phil. chil. Dipt. 727. Schiner, Dipt. Novara 74.—Chile.

LAGARUS.

Philippi, Chil. Dipt. 729, 1865.

Paulseni Phil. chil. Dipt. 729.—Chile.

XYLOPHAGUS.

Meigen, Illiger's Mag. ii, 1803.

carbonarius Phil. chil. Dipt. 727.—Chile.

Walker's Species.

Xylophagus ? vetusus Walk. List v, 106.—Para.
" *vittatus* Walk. Tr. Linn. Soc. Lond. xvii, 338.—Brazil.

The Habitat of the Following is not Known:

Dialysis dissimilis Walk. (? *Xylophagus americanus* Cat. Dipt. Brit. Mus. 126). Walk. Dipt. Saund. i, 4.
Xylophagus latistria Walk. List i, 130.

Family CŒNOMYIDÆ.

CHIROMYZA.

Wied. Nova Dipt. 1820.
Xenomorpha Macq. Dipt. Exot. i, 1, 193, 1838.

fuscana Wied. Dipt. Exot. i, 115, 2; id. Auss. zw. Ins. i, 238, 2. Schiner, Dipt. Novara 76. Wulp, Tijdschr. Ent. xxiv, 157.—South America, Bahia, Mexico.

ochracea Wied. Nova Dipt. 20; id. Auss. zw. Ins. i, 238. Schiner, Dipt. Novara 76.—Brazil.

vittata Wied. Nova Dipt. Gen. 20, f. 8; id. Dipt. Exot. 114, 1; id. Auss. zw. Ins. i, 237. Jensen, Bull. Soc. Nat. Mosc. iv, 337. Macq. Suit. Buff. Dipt. i, 422, pl. 10, f. 10. Guer. Icon. 543, pl. 97, f. 7. Walk. Tr. Linn. Soc. Lond. xvii, 347; id. List i, 227. Schiner, Dipt. Novara 76. F. Lynch A. Cat. 124 (16).

Xenomorpha leptiformis Macq. Dipt. Exot. i, 1, 193, pl. 23, f. 1, et i, 2, 306. Walk. List v, 66 (F. Lynch A.).

Chiromyza leptiformis Brum. Reise ii, 171 (F. Lynch A.).—Brazil, Tucuman, Colombia.

sp. Will. Tr. Am. Ent. Soc. xv, 244.—Brazil.

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* According to Scudder, Nomenclator Zoologicus, the term *Heterostomus* has been employed by Duval in Coleoptera. The literature at hand, however, does not make it possible to ascertain the date.

CŒNURA.

Bigot, Dipt. Nouv. Chili, Ann. Soc. Ent. Fr. Ser. iii, vol. 5, 277, 1857.

albopunctata Schiner, Dipt. Novara 77.—Chile.

biguttata Phil. chil. Dipt. 726.—Valdivia.

elegans Phil. chil. Dipt. 727.—Chile.

longicauda Bigot, Ann. Soc. Ent. Fr. Ser. iii, vol. 5, p. 286. Phil. chil. Dipt. 726.—Chile.

xanthopleira Phil. chil. Dipt. 726.—Valdivia.

HYLORUS.

Phil. chil. Dipt. 729, 1865. Will. Tr. Am. Ent. Soc. xv, 244. Osten Sacken, Berl. Ent. Zeit. 1882, sepr. 6.

Krausei Phil. chil. Dipt. 729.—Chile.

Superfamily TANYSTOMA.

Family TABANIDÆ.

PANGONIA.

Latreille, Hist. Nat. Crust. et. Ins. iii, 437, 1802.

albifasciata Macq. Dipt. Exot. Suppl. i, 156, pl. iii, f. 8.—New Granada.

albifrons Macq. Dipt. Exot. i, 112. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 708.—Chile.

albithorax Macq. Dipt. Exot. i, 1, 111, 22. Blanch. Gay. Hist. Chil. Zool. vii, 288. Phil. chil. Dipt. 707. Schiner, Dipt. Novara 101.—Chile.

analis Fabr. Syst. Antl. 91, 6. Wied. Dipt. Exot. i, 57, 11; id. Auss. zw. Ins. i, 93, 12.—S. America.

arcuata Will. Kans. Univ. Quart. iii, 190.—Brazil.

ardens Macq. Dipt. Exot. i, 1, 107.—Brazil.

atra Phil. chil. Dipt. 709.—Chile.

atripes Roeder, Dipt. Stuebel, 1892, 7.—Bolivia.

aurimaculata Macq. Dipt. Exot. i, 1, 109.—Brazil.

australis Phil. chil. Dipt. 710. F. Lynch A. Cat. 130 (22).—Chile.

basilaris Wied. Auss. zw. Ins. i, 555. Roeder, Dipt. Stuebel, 1892, 7.—Brazil, Ecuador.

Besckii Wied. Auss. zw. Ins. i, 97, 18.—Interior of Brazil.

castanea Perty, Del. Anim. Bras. 182, pl. xxxvi, f. 8.—Brazil.

chlorogastra Phil. chil. Dipt. 708.—Valdivia.

collaris Phil. chil. Dipt. 705.—Valdivia.

conica Bigot, Ann. Soc. Ent. Fr. 1857, 281.—Chile.

diaphana Schiner, Dipt. Novara 99. Will. Kans. Univ. Quart. iii, 190.—Colombia, Brazil.

dorsoguttata Macq. Dipt. Exot. Suppl. iv, 1, 328. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 708.—Chile.

eriomera Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 708.—Chile.

eriomera Macq. Dipt. Exot. i, 1, 109, pl. xiv, f. 3.—Brazil.

fasciata Macq. Dipt. Exot. i, 1, 107.—Brazil.

fascipennis Macq. Dipt. Exot. i, 1, 110. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 707. Schiner, Dipt. Novara 98.—Chile.

fenestrata Macq. Dipt. Exot. Suppl. i, 154, pl. iii, f. 4.—Brazil.
ferruginea Macq. Dipt. Exot. i, 2, 295.—Brazil.
filipalpis Will. Kans. Univ. Quart. iii, 190.—Paraguay River.
fulvithorax Wied. Dipt. Exot. i, 52, 2; id. Auss. zw. Ins. i, 89, 4. Will. Kans. Univ. Quart. iii, 190. Osten Sacken, Biol. C. A. Dipt. i, 58.—Brazil.
furcata Wied. Auss. zw. Ins. i, 99, 23.—Brazil.
fuscipennis Wied. Auss. zw. Ins. i, 95, 16.—Brazil.
grisea Jaennicke, Exot. Dipt. 331.—Chile.
incisuralis Macq. Dipt. Exot. Suppl. ii, 1, 28.—Brazil ?
incompleta Macq. Dipt. Exot. Suppl. i, 155, pl. iii, f. 7; id. Suppl. iv, 1, 329. Walk. Dipt. Saund. i, 20.—Colombia.
jucunda Jaenn. Exot. Dipt. 327.—Chile.
lasiophthalma Wulp, Tijdschr. Ent. xxi, 365, pl. 9, f. 6.—Argentina.
lata Guer. Icon. Reg. An. Art. Ins. pl. 77, f. 1, Desch. Ins. King, 336 (*Tabanus*). Roeder, Stett. Ent. Zeit. 1882, 511.
Pangonia depressa Macq. Dipt. Exot. i, 1, 111, 21; id. Suppl. iv, 1, 329. Phil. chil. Dipt. 707. Schiner Dipt. Novara 100 (Roeder).
Pangonia crocata Jaenn. Exot. Dipt. 330.—Chile.
laterina Rond. Dipt. Oscul. 16.—Tropical America.
latipalpis Macq. Dipt. Exot. Suppl. iv, 1, 329, pl. ii, f. 4. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 708. Roeder, Stett. Ent. Zeit. 1882, 511.
Thichopthalma Landbecki Phil. loc. ? (Roeder).
" *amœna* Bigot Dipt. Nouv. 1867, xxiii, 20 (Roeder).—Chile.
leucopogon Wied. Auss. zw. Ins. i, 92, 11.—Brazil.
ligens Wied. Auss. zw. Ins. i, 97, 2. Macq. Dipt. Exot. i, 1, 106. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 707.—Brazil.
longipalpis Macq. Dipt. Exot. Suppl. ii, 2, 169, pl. i, f, 3.—Brazil.
longirostris Macq. Dipt. Exot. Suppl. ii, 1, 28.—Brazil ?
lugubris Macq. Dipt. Exot. i, 1, 108, pl. xiv, f. 2,—Brazil.
marginalis Wied. Auss. zw. Ins. ii, 620.—Brazil.
minor Macq. Dipt. Exot. Suppl. ii, 1, 29.—"America ?"
molesta Wied. Auss. zw. Ins. i, 91, 9.—Brazil.
morio Wulp, Tijdschr. Ent. xxiv, 156.—Argentina.
nigrlvittata Macq. Dipt. Exot. Suppl. iv. 327.—Brazil.
obscuripennis Phil. chil. Dipt. 710.—Chile.
prasiventris Macq. Dipt. Exot. Suppl. i, 157, pl. iii, f. 9. Schiner, Dipt. Novara 101. Osten Sacken, Biol. C. A. Dipt. i, xx, 45.—Colombia, Panama.
rufa Macq. Dipt. Exot. i, 1, 110.—Lima.
rufa-aurea Phil. chil. Dipt. 709.—Chile.
sorbeus Wied. Auss. zw. Ins i, 93, 13 (*Pangonia*). Walk. List i, 133, et v, 123, et 128, et Add. 323. F. Lynch A. Cat. 130 (22).
Pangonia (*Fidena*) *sorbeus* Walk. Dipt. Saund. 8 (F. Lynch A.)—Montevideo, Brazil.
subandina Phil. chil. Dipt. 710.—Chile.
suturalis Rond. Esame Ditt. Bras. 47.—Brazil.
tabanipennis Macq. Dipt. Exot. i, 1, 108.—Brazil.
testaceiventris Macq. Dipt. Exot. Suppl. ii, 2, 169. Schiner, Dipt. Novara 99.—Peru.
translucens Macq. Dipt. Exot. Suppl. i, 155, pl. iii, f. 5.—Brazil.

unicolor Macq. Dipt. Exot. Suppl. i, 155, pl. iii, f. 6. Will. Kans. Univ. Quart. iii, 190.—Brazil.

venosa Wied. Dipt. Exot. i, 52, 1; id. Auss. zw. Ins. i, 87, 1. Will. Kans. Univ. Quart. iii, 189.—Brazil.

viridiventris Macq. Dipt. Exot. i, 1, 112. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt. 708.—Chile.

vittata Phil. chil. Dipt. 711.—Chile.

vulpes Macq. Dipt. Exot. Suppl. iv, 1, 327. Blanch. Gay. Hist. Chil. Zool. vii, 386. Phil. chil. Dipt.—Chile.

Winthemi Wied. Zool. Mag. iii, 44, 5; id. Dipt. Exot. i, 53, 3; id. Auss. zw. Ins. i, 91, 8.—Brazil.

xanthopogon Macq. Dipt. Exot. i, 2, 295.—Brazil.

PITYOCERA.

Giglio-Tos, Boll. Mus. Zool. Comp. Torino, 224, 1896.

festæ Giglio-Tos, l. c.—Darien.

DICRANOMYIA.

Nom. nov. for *Dicrania* Macq. Suit. Buff. 1834, preoccupied by Lep. Serv. 1825 in Coleoptera.

Cervus Wied. Auss. zw. Ins. i, 94 (*Pangonia*). Macq. Dipt. Exot. i, 1, 114, pl. xv, f. 3. Giglio-Tos, Bull. Mus. Torino 1897, 276.–Brazil, Guiana, Equador.

DICLISA.

Schiner, Dipt. Novara, 101, 1868.

distincta Schiner, Dipt. Novara, 102.—S. America.

incompleta Macq. Dipt. Exot. Suppl. i, 27, 35, pl. iii, f. 6, 7; id. Suppl. iv, 25. Schiner, Dipt. Novara 101.—S. America.

maculipennis Schiner, Dipt. Novara, 102. Osten Sacken, Biol. C. A. Dipt. i, 47. Roeder, Dipt. Stuebel, 1892, 8.—S. American, Panama, Venezuela.

CHRYSOPS.

Meigen, Illiger's Mag. 1803.

afflictus Wied. Auss. zw. Ins. i, 204, 15.—Brazil.

bimaculatus Wied. Auss. zw. Ins. i, 201, 10.—Brazil.

calogaster Schiner, Dipt. Novara, 103.—S. America.

costatus Fabr. Ent. Syst. iv, 373, 45 (*Tabanus*); id. Syst. Antl. 112. Palisot, Ins. Amer. 22, pl. iii, f. 7. Wied. Dipt. Exot. i, 104; id. Auss. zw. Ins. i, 198, 5. Macq. Dipt. Exot. i, 1, 160. Bigot, Sagra, 798. Guer. Iconogr. iii, 542, pl. xcvii, f. 3 (called *molestus* on the plate). Osten Sacken, Prodr. ii, 476; id. Biol. C. A. Dipt. i, 47. Johnson, Proc. Acad. Nat. Sci. Phil. 1894, 272.

? *Tabanus variegatus* De Geer, vi, pl. xxx, f. 7 (Osten Sacken).

Chrysops vulneratus Rondani, Esame Ditt. Bras. 44 (Osten Sacken).—South America, Brazil, Central America, Mexico, Cuba, Jamaica, W. Indies.

crucians Wied. Auss. zw. Ins. i, 211, 24.– Brazil.

crudelis Wied. Auss. zw. Ins. i, 195, 2.– Habitat unknown.

guttula Wied. Auss. zw. Ins. 203, 13.—Brazil.

incisus Macq. Dipt. Exot. Suppl. i, 44, 15, pl. iv, f. 12. Schiner, Dipt. Novara, 104.—S. America.

intrudens Will. Kans. Univ. Quart. iii, 191.—Brazil.
lætus Fabr. Syst. Antl. 112, 7. Wied. Auss. zw. Ins. i, 207, 19. Schiner, Dipt. Novara 103.—S. America.
lateralis Wied. Auss. zw. Ins. i, 209. Walker, List, i, 200, v, 286. O. Sacken, Biol. C. A. Dipt. i, 59.—Patria ignota (Walk.), Honduras et S. America (Walk.).
leucospilus Wied. zw. Ins. i, 202, 12. Schiner, Dipt. Novara 104.—Colombia.
lugubris Macq. Dipt. Exot. Suppl. i, 172, pl. iv, f. 11.—Brazil.
merula Phil. chil. Dipt. 724.—Chile.
molestus Wied. Auss. zw. Ins. i, 205, 17.—Brazil.
subfascipennis Macq. Dipt. Exot. Suppl. v, 55.—S. America.
tardus Wied. Auss. zw. Ins. i, 577.—Brazil.
terminalis Macq. Dipt. Exot. Suppl. v, 56.—Amazon.
trifaria Macq. Dipt. Exot. i, 1, 163. Phil. chil. Dipt. 724.—Chile.
tristis Fabr. Ent. Syst. Suppl. 567, 44; id. Syst. Antl. 112, 6. Wied. Dipt. Exot. i, 103, 2; id. Auss. zw. Ins. 197, 4.—Cayenne.
varians Wied. Auss. zw. Ins. i, 208, 20. Rond. Dipt. Oscul. 16. Schiner, Dipt. Novara 104. Will. Kans. Univ. Quart. iii, 40, 192.—Chile, Brazil.

Note.—About the possibility of *Chrysops geminatus* Wied. Auss. zw. Ins. i, 205, et Macq. Dipt. Exot. Suppl. iv, 39, being a Brazilian species, a specimen in the Vienna Museum being labeled as coming from that locality, see Wulp Wien. Ent. Zeit. 1894, pp. 139–141. Mr. Wulp is of the opinion that Macquart was wrong in identifying Wiedemann's species, and redescribes the type of Macquart as *Chrysops crassicornis*.

ESENBECKIA.

Rond. Dipt. Exot. 83, 1864.

pangonia Wied. Auss. zw. Ins. ii, 623, 19 (*Silvius*). Walk. List v (*Silvius*). F. Lynch A. Cat. 131 (23).—Brazil, Argentina.

SILVIUS.

Meigen, Syst. Beschr. iii, 27, 1320.

nubipennis Rond. Dipt. Oscul. 17.—Am. equat.
rufipes Macq. Dipt. Exot. Suppl. iv, 1, 342. F. Lynch A. Cat. 131 (23).—Brazil.
silverii Macq. Dipt. Exot. i, 1, 159, pl. 19, f. 1.—Brazil.
vulpes Wied. Auss. zw. Ins. i, 111, 1.—Brazil.

VEPRIUS.*

Rond. Dipt. Exot. 83, 1864.

presbiter Rond. Dipt. Exot. 83.—Chile.

SCEPSIS.

Walker, Dipt. Saund. 71 (1850).

nivalis Walk. Dipt. Saund. i, 71, pl. ii, f. 7. F. Lynch A. Cat. 131 (23).—Montevideo.

HADRUS.

Perty Del. Anim. Bras. 182, 1833.

Lepiselaga Macq. Dipt. Exot. i, 1, 90, bis et 153 (138).
albitarsis Macq. Dipt. Exot. Suppl. v, i, 340 (*Lepiselaga*).—Buenos Aires.

* This genus consists of species exactly like *Silvius* but with hairy eyes.

crassipes (Fabr.), vide Loew, Berl. Ent.Zeit. 1869, 6. E. Lynch A. Cat. 131 (23).
Hæmatopota crassipes Fabr. Syst. Antl. 108, 4. Wied. Dipt. Exot. 97; id. Auss. zw. Ins. i, 220.
Tabanus lepidotus Wied. Auss. zw. Ins. i, 193, 123.
Hadrus lepidotus Perty, Del. Ditt. Bras. 183, pl. xxxvi, f. 9. Walk. List i. 209, v, 272. Macq. Dipt. Exot. i, 1, 154, pl. 18, f. 3. Bell. Ditt. Mess. i, 75 (excl. male = *Lepiselaga recta* Loew). Schiner, Dipt. Novara 96. Will. Kans. Univ. Quart. iii, 192.
Lepiselaga lepidota Macq. Dipt. Exot. i, 1, 54, pl. 18, f. 3. Osten Sacken, Prodr. ii, 475; id. Cat. 1878, 55.
—Brazil, Guiana, Argentina, Mexico, Cuba.

chalybeus Perty, Del. Ditt. Bras. 183, pl. xxxvi, f. 10.—Brazil.

parvus Will. Kans. Univ. Quart. iii, 192.—Rio Paraguay.

recta Loew, Cent. viii, 8. Osten Sacken, Biol. C. A. Dipt. i, 57 (*Lepidoselaga*).
Hadrus lepidotus Bell. Ditt. Mess. i, 75 (Loew).
Colombia, Mexico.

HÆMATOPOTA.

Meigen, Illiger's Mag. 1803.

coarctata Wied. Auss. zw. Ins. i, 578.—Brazil.

pluvialis Macq. Dipt. Exot. i, 1, 166.—South America.

podagrica Fabr. Syst. Antl. 108, 5. Wied. Dipt. Exot. i, 98, 3; id. Auss. zw. Ins. 219, 9.—South America.

STIBASOMA.

Schiner, Verh. zool.-bot. Ges. Wien. xvii, 310, 1867.

fulvohirtum Wied. Auss. zw. Ins. i, 155 (*Tabanus*). Schiner, Dipt. Novara 94 (*Stibasoma*). Osten Sacken, Biol. C. A. Dipt. i, 57.
Tabanus compactus Walk. List v, 222 (Osten Sacken).
—Brazil, Colombia, Panama.

theotænia Will. Kans. Univ. Quart. iii, 194.
? *Tabanus theotænia* Wied. Auss. zw. Ins. i, 136, 38. Schiner, Dipt. Novara 94 (*Stibasoma*). E. Lynch A. Cat. 133 (25).

DICHELACERA.

Macq. Dipt. Exot. i, 1, 112, 1838.

cervicornis Fabr. Syst. Antl. 100, 35 (*Tabanus*). Wied. Auss. zw. Ins. i, 157, 73 (*Tabanus*). Schiner, Dipt. Novara 94. Osten Sacken, Biol. C. A. Dipt. i, 58.—South America, Central America.

flava Wied. Auss. zw. Ins. i, 163. E. Lynch A. Cat 132 (24).—Montevideo.

fuscipennis Macq. Dipt. Exot. ii, 1, 30.—Brazil.

immaculata Macq. Dipt. Exot. i, 1, 119.—Brazil.

januarii Wied. Zool. Mag. i, 3, 43; id. Auss. zw. Ins, i, 162, 79 (*Tabanus*). Macq. Dipt. Exot. Suppl. ii, 2, 170. Schiner, Dipt. Novara 95.—So. America.

longicornis Macq. Dipt. Exot. i, 1, 118, pl. xvi, f. 2.—Brazil.

marginata Macq. Dipt. Exot. Suppl. ii, 1, 30.—Cayenne.

nubipennis Rond. Dipt. Strobel 16, 37. E. Lynch A. Cat. 133 (25).—Argentina.

* rufa Macq. Dipt. Exot. Suppl. ii, 1, 29.—Brazil.

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* See *Tabanus brasiliensis* Rond.

scutellata (*Diachlorus* ?) Will. Kans. Univ. Quart. iii, 193.—Brazil.
testacea Macq. Dipt. Exot. Suppl. i, 157, pl. iii, f. 10.—Colombia.
unifascíata Macq. Dipt. Exot. i, 1, 119. E. Lynch A. Cat. 133 (25).—Braizl, Buenos Aires.

ACANTHOCERA.

Macq. Suit. Buff. 1834.

exstincta Wied. Auss. zw. Ins. 214, 2 (*Hæmatopota*). Walk. List v, 295 (*Hæmatopota*). E. Lynch A. Cat. 132 (24).
Acanthocera marginalis Walk. List v, 268 (Loew).
—Montevideo, Brazil.
longicornis Fabr. Ent. Syst. iv, 371, 38 (*Tabanus*); id. Syst. Antl. 103, 45 (*Tabanus*). Wied. Dipt. Exot. i, 98, 4; id. Auss. zw. Ins. i, 213, 1 (*Hæmatopota*). Macq. Dipt. Exot. i, 1, 158.
Hæmatopota triangularis Wied. Zool. Mag. iii, 44, 6 (Wied.).
—Brazil.
trigonifera Schiner, Dipt. Novara 95.—South America.

DIACHLORUS.

Osten Sacken, Prodr. ii, 475, 1876.

Diabasis Macq. Hist. Nat. Dipt. i, 207; id. Dipt. Exot. i, 1, 15, Preoccupied for a genus in Coleoptera, Osten Sacken.

curvipes Fabr. Syst. Antl. 107, 3 (*Tabanus*). Wied. Auss. zw. Ins. i, 90, 49 (*Tabanus*). Macq. Hist. Nat. Dipt. i, 208 (*Diabasis*). Will. Kans. Univ. Quart. iii, 193.—South America, Paraguay River.
diversipes Macq. Dipt. Exot. ii, 2, 132, pl. i, f. 5 (*Diabasis*). Wulp, Notes from the Leyden Museum, vii, p. ii, p. 81.—Surinam.
ferrugatus Fabr. Syst. Antl. 111, 2 (*Chrysopa*). Wied. Dipt. Exot. i, 94; id. Auss. zw. Ins. i, 186, 113 (*Tabanus*). Walk. List i, 191, et v, 148 (*Dichelacera*). Osten Sacken, Mongr. Taban. 396 (*Diabasis*); id. Biol. C. A. Dipt. i, 57.
Diabasis atænia Macq. Dipt. Exot. i, 1, 152. Walk. List v, 271 (O. Sacken).
Chrysops approximans Walk. List i, 198 (Osten Sacken).
Chrysops convergens Walk. List i, 198 (Osten Sacken).
Tabanus americanus Palisot, Dipt. Tab. iii, f. 6 (Osten Sacken).
Tabanus roulanii Bell. Ditt. Mess. 57 (Osten Sacken).
—United States, Mexico, West Indies, Brazil.
fuscipennis Macq. Dipt. Exot. i, 1, 156 (*Diabasis*).—Brazil.
interrupta Macq. Dipt. Exot. i, 1, 156 (*Diabasis*).—Brazil.
ochrea Macq. Dipt. Exot. Suppl. iv, 1, 341 (*Diabasis*). E. Lynch A. Cat. 133 (25).—Brazil, Corrientes.
scutellata Macq. Dipt. Exot. i, 1, 155 (*Diabasis*).—Cayenne.
varipes Rond. Esame Ditt. Bras. 45 (*Diabasis*).—Brazil.

MYCTEROMYIA.

Philippi, Aufz. Chil. Dipt. 712, 1865.

brevirostris Phil. chil. Dipt. 713.—Chile.
conica Bigot, Dipt. Chil. 278, pl. vi, f. 4. Phil. chil. Dipt. 712.—Chile.
fusca Phil. chil. Dipt. 712.—Chile.
murina Phil. chil. Dipt. 713.—Chile.

SELASOMA.

tibialis Fabr. Syst. Antl. 102, 39 (*Tabanus*). Wied. Dipt. Exot. i, 89, 47; id. Auss. zw. Ins. i, 164, 82 (*Tabanus*). Macq. Dipt. Exot. i, 2, 304. Will. Kans. Univ. Quart. iii, 192.—Brazil, South America.

TABANUS.

Linne, Fauna Suecica 1761.

acutidens Phil. chil. Dipt. 715.—Chile.

albibarbis Wied. Anal. Ent. 21, 6; id. Auss. zw. Ins. i, 123, 22.—South America.

albicans Macq. Dipt. Exot. Suppl. i, 165.—Colombia.

albicollis Macq. Dipt. Exot. Suppl. iv, i, 336.—Guiana.

albipalpis (*Agelanius*) Rond. Dipt. Strobel 13. E. Lynch A. Cat. 132 (24).—Argentina.

anbohirtus Walk. Tr. Linn. Soc. Lond. xvii, 338. E. Lynch A. Cat. 133 (25).—Cape Gregory.

albonotatus Bell. Ditt. Mess. i, 56, pl. ii, f. 5. O. Sacken, Biol. C. A. Dipt. i, 55.
Tabanus oculus Walk. List i, 158 (Osten Sacken).
Tabanus bipartitus Walk. List i, 158 (Osten Sacken).—Mexico, Honduras, Colombia.

alcicornis Wied. Auss. zw. Ins. i, 158, 74.—Brazil.

alcis Will. Trans. Ent. Soc. Lond. 1896, pt. iii, p. 302, pl. x, f. 77.—St. Vincent.

anachoreta Phil. chil. Dipt. 717. Schiner, Dipt. Novara 84.—Chile.

andicola Phil. chil. Dipt. 716.—Chile.

angustifrons Macq. Dipt. Exot. Suppl. ii, 2, 172.—Cayenne.

angustus Macq. Dipt. Exot. i, 1, 140, pl. xvii, f. 3. Walk. List v, 194, et 208, 226. E. Lynch A. Cat. 134 (26).—Montevideo.

? annulicornis Phil. chil. Dipt. 721.—Chile.

antarcticus Linn. Syst. Nat. ii, 1001, 15. Wied. Auss. zw. Ins. i, 577.—"America calidiore."

aphanopterus Wied. Auss. zw. Ins. i, 148, 59.—Brazil.

apicalis Wied. Auss. zw. Ins. i, 142, 49.—Brazil.

apœcilus Schiner, Dipt. Novara 85.—Chile.

argyrophorus Schiner, Dipt. Novara 90.—South America.

auribarbis Macq. Dipt. Exot. Suppl. ii, 2, 172. Roeder, Dipt. Stubel 1892, 8.—Quito, Ecuador.

aurora Macq. Dipt. Exot. i, 1, 142.—Brazil.

bicincta Fabr. Syst. Antl. 102, 42. Wied. Dipt. Exot. i, 105, 6; id. Auss. zw. Ins. i, 191, 120 (*Chrysops*).—South America.

Bigoti Bell. Ditt. Mess. i, 58. Osten Sacken, Biol. C. A. Dipt. i, 48.
Tabanus apicalis Macq. Dipt. Exot. Suppl. ii, 20 (Osten Sacken).
Tabanus macquarti Schiner, Dipt. Novara 89 (Osten Sacken).
? *Tabanus ribidus* Macq. Dipt. Exot. Suppl. ii, 19, 10 (Schiner).—Mexico, Nicaragua, Colombia.

bivittatus Macq. Dipt. Exot. Suppl. i, 163. Wied. Auss. zw. Ins. 193, 122.—Brazil.

bonariensis Macq. Dipt. Exot. i, 1, 142. Walk. List v, 196, et 209, 230. E. Lynch A. Cat. 134 (26).
Agelanius acupunctatus Rond. Dipt. Strobel 15, 36 (E. Lynch A.).—Buenos Aires, Patagonia.

brasiliensis Rond. Oss. Esap. Ditt. 192.

? *Dichelacera rufa* Macq. Dipt. Exot. ii, 1, 29 (Rond.). —Insulæ St. Sebastiani.

caiennensis Fabr. Ent. Syst. iv, 366: id. Syst. Antl. 98, 22. Wied. Dipt. Exot. i, 91, 52; id. Auss. zw. Ins. i, 178, 101.—Cayenne, Brazil.

callosus Macq. Dipt. Exot. Suppl. ii, 2, 171.—Rio Negro.

calopterus Schiner, Dipt. Novara 91.—South America.

capreolus Wied. Auss. zw. Ins. i, 162, 78.—Brazil.

carbo Macq. Dipt. Exot. Suppl. iv, 1, 337. Blanch. Gay. Hist. Chil. Zool. vii, 391. Phil. chil. Dipt. 714. Schiner, Dipt. Novara 92.—Chile.

chilensis Macq. Dipt. Exot. i, 1, 145. Blanch. Gay. Hist. Chil. Zool. vii, 391. Phil chil. Dipt. 714.—Chile.

cinerarius Wied. Zool. Mag. iii, 42, 3 (*T. glaucus*); id. Dipt. Exot. i, 69. 13 (ib.). —Brazil.

cinereus Wied. Dipt. Exot. i, 89, 48; id. Auss. zw. Ins. i, 169, 85.—So. America.

cinnamomeus Schiner, Dipt. Novara 90.—South America.

clarus Schiner, Dipt. Novara 87.– South America.

clausus Macq. Dipt. Exot. Suppl. ii, 1, 33.—Brazil.

colombensis Macq. Dipt. Exot. Suppl. 1, 165. pl. iv, f. 2.—Colombia.

comitans Wied. Auss. zw. Ins. i, 175, 96.—Brazil.

coracinus Phil. chil. Dipt. 718.—Chile.

damicornis Fabr. Syst. Antl. 101, 36. Wied. Dipt. Exot. i, 87, 45; id. Auss. zw. Ins. i, 159, 75.– South America.

discus Wied. Auss. zw. Ins. i, 123, 18.—Brazil.

dorsiger Wied. Dipt. Exot. i, 83, 38; id. Auss. zw. Ins. i, 172, 92. Walk. List i, 180, v, 193, 202. E. Lynch A. Cat. 134 (26).—Brazil, Montevideo.

dorsovittatus Macq. Dipt. Exot. Suppl. v, 50.—Tropical America.

duplovittatus (*Agelanius*) Rond. Dipt. Strobel 14. E. Lynch A. Cat. 134 (26).— Buenos Aires, Bahia Blanca.

elongatus Macq. Dipt. Exot. Suppl. i, 166. pl. iv, f. 4.—New Granada.

elongato Macq. Dipt. Exot. Suppl. i, 38, 79. Vide, Dipt. Eng. Resa 452.

exæstuans Linn. Syst. Nat. ii. 1000. Fabr. Syst. Ent. iv, 365; id. Syst. Antl. 96. Wied. Auss. zw. Ins. i, 143.

Tabanus fuscus De Geer, Ins vi, 229, 8, pl. 30, f. 5 (Wied.). —"America."

fallax Macq. Dipt. Exot. Suppl. ii, 1, 36.—Cayenne.

fascipennis Macq. Dipt. Exot. Suppl. i, 163, pl. iv, f. 1. Schiner, Dipt. Novara, 93.—Brazil, New Granada.

fenestratus Macq. Dipt. Exot. i, 1, 139, pl. xv, f. 3.—Brazil.

fervens Linn. Syst. Nat. ii, 1000, 9. Fabr. Ent. Syst. iv, 365, 12; id. Syst. Antl. 95, 11. De Geer, vi, 228, 4, pl. 30, f. 4. Wied. Auss. zw. Ins. i, 186, 112.

festivus Wied. Auss. zw. Ins. i, 135, 37. Will. Kans. Univ. Quart. iii, 195.—Brazil.

flavibarbis Macq. Dipt. Exot. Suppl. i, 169.—Cayenne.

flavifacies Macq. Dipt. Exot. Suppl. i, 164.—Colombia.

flaviventris Macq. Dipt. Exot. Suppl. ii, 2, 171, pl. i, f. 4.—Rio Negro.

fulvilateralis Macq. Dipt. Exot. i, 1, 137. – Cayenne.

fulvipes Phil. chil. Dipt. 723.—Chile.

fulviventris Macq. Dipt. Exot. Suppl. i, 164.—Brazil.

fumatus Hffg. Wied. Dipt. Exot. i, 91, 50; id. Auss. zw. Ins. i, 177, 99.—Brazil.

fuscipennis Wied. Auss. zw. Ins. i, 179, 102.—Brazil.

fuscofasciatus Macq. Dipt. Exot. i, 1, 140.—Brazil.

fuscus Wied. Zool. Mag. iii, 41, 1; id. Dipt. Exot. i, 68, 12; id. Auss. zw. Ins. i, 121, 14, et 556.—Brazil.

gagantinus Phil. chil. Dipt. 719.—Chile.

glaber Wied. Auss. zw. Ins. 1, 192, 121.—Brazil.

globicornis Hffg. Wied. Dipt. Exot. i, 96, 59; id. Auss. zw. Ins. i, 190, 118.—Brazil.

guttatus Meg. Wied. Dipt. Exot. i, 73; id. Auss. zw. Ins. i, 133.—"America."

guttipennis Wied. Auss. zw. Ins. i, 153, 67. Schiner, Dipt. Novara 88.—Brazil.

guyanens Macq. Dipt. Exot. Suppl. i, 169, pl. iv, f. 9.—Guiana.

hamatus Wuld, Tijdschr. Ent. xxiv, 159, pl. 15, f. 7.—Argentina.

hilarii Macq. Dipt. Exot. i, 2, 301. Walk. List v, 194, 210, 236. E. Lynch A. Cat. 134 (26).—Brazil.

? hirtuosus Phil. chil. Dipt. 719.—Chile.

histrio Wied. Auss. zw. Ins. ii, 625, 24. Schiner, Dipt. Novara 87.—So. America.

importunus Macq. Dipt. Exot. Suppl. ii, 1, 34. Wied. Auss. zw. Ins. i, 127, 24. Will. Kans. Univ. Quart. iii, 195.—Brazil.

impressus Wied. Auss. zw. Ins. i, 126, 23. Walk. List v, 194, 210, 236. E. Lynch A. 134 (26).—Montevideo. Brazil, Demerara.

incertus Blanch. Gay, Hist. Chil. Zool. vii, 391, pl. ii, f. 1. Phil. chil. Dipt. 713.—Chile.

incisuralis Macq. Dipt. Exot. Suppl. ii, 1, 37.—"America."

indicus Fabr. Syst. Antl. 103, 48. Wied. Dipt. Exot. i, 75, 26.—South America.

informatus Phil. chil. Dipt. 718.—Chile.

inornatus Phil. chil. Dipt. 718. Wulp, Tijds. Ent. xxiv, 159.—Chile, Argentina.

interpositus (*Agelanius*) Rond. Dipt. Strobel 15, 35. E. Lynch A. Cat. 134 (26).—Mendoza.

ixyostactes Wied. Auss. zw. Ins. i, 190, 119.—Brazil.

lasiopthalma Blanch. Gay. Hist. Chil. Zool. vii, 391, pt. ii, f. 5. Phil. chil. Dipt. 714.—Chile.

lativentris Blanch. Gay. Hist. Zool. vii, 391, pl. ii, f. 3. Phil. chil. Dipt. 714.—Chile.

leucaspis Wied. Auss. zw. Ins. i, 179, 103. Rond. Esame. Ditt. Bras. 47. Will. Kans. Univ. Quart. iii, 105.—Brazil.

limpidapex Wied. Auss. zw. Ins. 140, 46.—Brazil.

lineola Fabr. Ent. Syst. iv, 369, 33; id. Syst. Antl. 102, 41. Coquebert, Ill. Icon. 112, pl. xxv, f. 6. Wied. Dipt. Exot. i, 81, 36; Auss. zw. Ins. i, 170, 89. Harris, Ins. Inj. 3rd ed. 602, f. 262. Palisot-Beauvois, Dipt. Tab. ii (?). Osten Sacken, Prodr. 448; id. Cat. 1878, 58; id. Biol. C. A. Dipt. i, 56.

Tabanus simulans Walk. List. i, 182 (Osten Sacken).

? *Tabanus scutellaris* Walk. Dipt. Saund. 27 (Osten Sacken).

Tabanus trilineatus Lart. Humb. et. Bonpl. Rec. d'obs. Zool. Fasc. x, 116. Walk. List v, 217. Bell. Ditt. Mess. 63. E. Lynch A. Cat. 135 (27). Osten Sacken.

Tabanus commixtus Walk. Trans. Ent. Soc. Lond. v, 273 (Osten Sacken).—United States, Nicaragua, Mexico, South America.

luctuosus Macq. Dipt. Exot. i, 1, 139.—Brazil, Surinam.

lugens Phil. chil. Dipt. xxx, 719. Schiner, Dipt. Novara 92.—Chile.

maculinervis Macq. Dipt. Exot. Suppl. v, 51.—South America.

maculipennis Wied. Auss. zw. Ins. i, 138, 42. Macq. Dipt. Exot. Suppl. 162, pl. iii, f. 14.—Brazil.

maculiventris Macq. Dipt. Exot. Suppl. iv, 1, 337. Blanch. Gay. Hist. Chil. Dipt. 714.—Chile.

magellanicus Phil. An. Univ. Chile, xxi, 413; id. chil. Dipt. 717. Bigot, Dipt. Miss. Cap Horn 19. E. Lynch A. Cat. 135 (26).—Straits of Magellan in Chile.

marginatus Macq. Dipt. Exot. Suppl. ii, 2, 172.—Brazil.

marginenvris Macq. Dipt. Exot. Suppl. v. 49.—South America.

melanostoma Phil. chil. Dipt. 720.—Chile.

meridianus Rond. Ditt. Exot. 79 (*Agelanius*).—Valdivia.

mexicanus Linn. Syst. Nat. ii, 1000, 10. Fabr Spec. Ins. ii, 457, 16; id. Ent. Syst. iv, 367, 22; id. Syst. Antl. 98, 25. Wied. Dipt. Exot. i, 76, 29; id. Auss. zw. Ins. i, 147, 58. Macq. Dipt. Exot. i, 1, 143, 43. O. Sacken, Prodr. ii, 459; id. Cat. 1878, 59; id. Biol. C. A. Dipt. i, 56. Bell. Ditt. Mess. i, 59.

Tabanus punctatus Fabr. Ent. Syst. iv, 368, 25.

" *inanis* Fabr. l. c. 26.

" *ochroleucus* Meig. Syst. Beschr. ii, 62, 41 (Meigen was mistaken in considering it as European (Wied.).

" *olivaceus* De Geer, vi, 230, 6, pl. 30, f. 6.

" *sulphureus* Pal.-Beauv. 222, Dipt. pl. iii, f. 3.

" *flavus* Macq. Hist. Nat. Dipt. i, 200, 13. Guerin, Gen. Dipt. pl. ii.

" *viridiflavus* Walk. Newman's Zool. viii, App. lxvi.

—United States, Mexico, Nicaragua, South America.

miles Wied Auss. zw. Ins. i, 139, 43.—Brazil.

minor Macq. Dipt. Exot. Suppl. iv, 1. E. Lynch A. Cat. 135 (27).—Patagonia.

minos Schiner, Dipt. Novara 88.—South America.

missionum Macq. Dipt. Exot. i, 2, 302. Walk. List v, 194, 222. E. Lynch A. Cat. 135 (27).—Missiones in Brazil.

modestus Wied. Auss. zw. Ins. i, 146. Macq. Dipt. Exot. Suppl. 1, 164. Schiner, Dipt. Novara 85. Will. Kans. Univ. Quart. iii, 195.—South America, Brazil.

molestissimus Phil. chil. Dipt. 716.—Chile.

monochroma Wied. Auss. zw. Ins. i, 555, 6. Walk. List v, 193, 203. E. Lynch A. Cat. 135 (27).—Montevideo.

monogramma Wied. Auss. zw. Ins. i, 150, 61.—Brazil.

nigrifrons Phil. chil. Dipt. 720. E. Lynch A. Cat. 135 (27).—Chile.

nigripalpis Macq. Dipt. Exot. Suppl. i, 168, pl. iv, f. 78. Schiner, Dipt. Nov. 91.

? *Tabanus nigripalpis* Macq. Roeder, Dipt. Stuebel 1892, 8.

—New Granada, Ecuador.

nigripennis Phil. chil. Dipt. 714.—Chile.

nigrocærulens Rond. Oss. Esap. Ditt. 191.—Venezuela.

nigrum Fabr. Syst. Antl. 101, 38. Wied. Auss. zw. Ins. i, 160, 76.—So. America.

? obscuratus Phil. chil. Dipt. 720.—Chile.

obscuripennis Phil. chil. Dipt. 722.—Chile.

obsoletus Wied. Dipt. Exot. i, 85, 42; id. Auss. zw. Ins. i, 147.—Brazil.

occidentalis Linn. Syst. Nat. ii, 1000, 13. Fabr. Ent. Syst. v, 386, 27; id. Syst. Antl. 99, 30. Wied. Dipt. Exot. i, 82, 37; id. Auss. zw. Ins. i, 171, 90, 557. Rond. Esame Ditt. 45.

Tabanus fuscus De Geer, Ins. vi, 228, 3, pl. 30, f. 3. —Brazil.

occidentalis Macq. Blanch. Gay. Hist. Chil. Zool. vii, 391, pl. ii, f. 6. Phil. chil. Dipt. 714.—Chile.

ochraceus Macq. Dipt. Exot. Suppl. i, 170.—Cayenne.

oliceiventris Macq. Dipt. Exot. Suppl. ii, 1, 34.—Para.

pachnodes Schiner, Dipt. Novara 84.—Chile.

Paulseni Phil. chil. Dipt. 721.—Chile.

pellucidus Fabr. Syst. Antl. 97, 21. Wied. Dipt. Exot. i, 70, 16.—So. America.

pellucidus Blanch. Gay. Hist. Chil. Zool. vii, 391, pl. ii, f. 2. Phil. chil. Dipt. 714.—Chile.

peruvianus Macq. Dipt. Exot. Suppl. ii, 2, 173.—Quito in Brazil.

Philippi Rond. Dipt. Exot. 79 (*Agelanius**).—Chile.

piceiventris Rond. Esame Ditt. Bras. 46.—Brazil.

planiventris Wied. Auss. zw. Ins. i, 139, 44.—Brazil.

pœcilopterus Schiner, Dipt. Novara 91.—South America.

potator Wied. Auss. zw. Ins. i, 149.—Brazil.

psolopterus Wied. Auss. zw. Ins. i, 181. Walk. List v, 198, 205, 218. E. Lynch A. Cat. 136 (28).—Montevideo.

pubescens Macq. Dipt. Exot. Suppl. ii, 1, 36.—"Amerique."

pulius Phil. chil. Dipt. 722.—Chile.

punctipennis Macq. Dipt. Exot. i, 2, 301.—Brazil.

punctum Rond. Esame 45.—Brazil.

pungens Wied. Auss. zw. Ins. i, 175, 97. Walk. List v, 193, 203. E. Lynch A. Cat. 136 (28).

quadrimaculatus Macq. Dipt. Exot. Suppl. i, 167, pl. iv, f. 5.—New Granada.

quadripunctatus (*Therioplectes*) Fabr. Ent. Syst. Suppl. et. Syst. Antl. 99, 29. Wied. Auss. zw. Ins. i, 151. Schiner, Dipt. Novara 86. Will. Kans. Univ. Quart. iii, 195. Osten Sacken, Cat. 1878, 57, n. 74; id. Biol. C. A. Dipt. i, 48.

Tabanus nigro-punctatus Bell. Ditt. Mess. i, 67, pl. ii, f. 8 (Osten Sacken). —Mexico, Guatemala, Costa Rica, Brazil.

rebescens Macq. Dipt. Exot. i, 1, 143. Walk. List v, 195, 212, 246. E. Lynch A. Cat. 136 (28).—Montevideo.

rubiginipennis Macq. Dipt. Exot. Suppl. 1, 167.—New Granada.

rubricornis Phil. chil. Dipt. 723.—Chile.

rubricosus Wulp. Tijdschr. Ent. xxiv, 161, pl. 15, f. 9.—Argentina.

rubrifrons Blanch. Gay. Hist. Chil. Zool. vii, 391, pl. ii, f. 7. Phil. chil. Dipt. 714.—Chile.

rubripes Macq. Dipt. Exot. i, 1, 138.—Cayenne.

rubrithorax Macq. Dipt. Exot. i, 1, 143.—Brazil.

rufescens Fabr. Syst. Antl. 100, 33. Wied. Dipt. Exot. i, 81; id. Auss. zw. Ins. i, 161.—South America.

rufipennis Macq. Dipt. Exot. i, 1, 138; id. Suppl. i, 169.—Brazil, New Granada.

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* *Agelanius* Rond. Dipt. Exot. 1864 is certainly the same as *Therioplectes* Zeller, 1842. It differs from *Tabanus* only in possessing pilose eyes. The description is not complete enough to tell if this species is of the genus *Atylotus* Osten Sacken, which is simply a *Tabanus* with hairy eyes and also with ocelligerous tubercle.

rufiventris Macq. Dipt. Exot. Suppl. i, 166. Johnson, Proc. Acad. Nat. Sci. Phil. 1894, 273.—Santa Fe in Bogota, Jamaica.
scythropus Schiner, Dipt. Novara 92.—Brazil.
senilis Phil. chil. Dipt. 715.—Chile.
sorbillans Wied. Auss. zw. Ins. i, 141.—Brazil.
stigma Fabr. Syst. Antl. 104, 50. Wied. Dipt. Exot. i, 92, 53; id. Auss. zw. Ins. i, 180, 104. Osten Sacken, Biol. C. A. Dipt. i, 59.—South America, St. Thomas.
sulphureus Macq. Dipt. Exot. Suppl. ii, 1, 35.—Brazil.
surinamensis Macq. Dipt. Exot. i, 1, 136.—Surinam.
tæniates Wied. Auss. zw. Ins. 188.—Brazil.
tephrodes Phil. chil. Dipt. 716.—Chile.
testaceomaculatus Macq. Dipt. Exot. 1, 1, 144. Schiner, Dipt. Novara 85. Blanch. Gay. Hist. Chil. Zool. vii, 391. Phil. chil. Dipt. 714. Wulp, Tijdschr. Ent. xxiv, 160.—Chile, Argentina.
testaceus Macq. Dipt. Exot. i, 1, 137 —Cayenne.
T-nigrum Fabr. Syst. Antl. 101. Wied. Auss. zw. Ins. i, 160. Will. Kans. Univ. Quart. iii, 195.—South America, Brazil.
triangulum Wied. Auss. zw. Ins. i, 143.—Brazil.
trifarius Macq. Dipt. Exot. i, 1, 144. Blanch. Gay. Hist. Chil. Zool. vii, 391. Phil. chil. Dipt. 714.—Chile.
trigonophorus Macq. Dipt. Exot. i, 2, 301. Walk. List v, 196, 222. E. Lynch A. Cat. 136 (28).—Brazil.
trilineatus Latr. in Humblt. et Bonap. Rec. d'obs. Zool. x, 116, pl. xi, f. 6. Wied. Dipt. Exot. i, 84; id. Auss. zw. Ins. i, 168. Rond. Dipt. Oscul. 17.—Brazil.
trimaculatus Pal. Beauv. Ins. 56, pl. i, f. 5 (N. A.). Wied Auss. zw. Ins. i, 137. —South America.
trinotatus Wied. Auss. zw. Ins. i, 182.—Brazil.
tristis Wied. Auss. zw. Ins. i, 164.—Brazil.
tritus Walk. Trans. Linn. Soc. Lond. xvii, 338; id. List i, 189. E. Lynch A. Cat. 136 (28).—Cape Greogory.
trivittatus Fabr. Syst. Antl. 104. Wied. Dipt. Exot. i, 85; id. Auss. zw. Ins. i, 85. Schiner, Dipt. Novara 86. Wulp, Tijdschr. Ent. xxiv, 160.—Brazil, Argentina.
unicinatus Wulp, Tijdschr. Ent. xxiv, 159, pl. 15, f. 8.—Argentina.
unicolor Wied. Auss. zw. Ins. i, 141. Will. Kans. Univ. iii, 195. Brazil.
univittatus Macq. Dipt. Exot. Suppl. v, 50.—South America.
uruguayensis E. Lynch A. Cat. 136 (28), n. n. pro *Tabanus pictipennis*. Macq. Dipt. Exot. Suppl. iv, 1, 336, pl. ii, f. 8.—Uruguay.
Valteri Macq. Dipt. Exot. i, 2, 300.—Brazil.
varipes Walk. Trans. Linn. Soc. Lond. xvii, 337. E. Lynch A. Cat. 136 (28).—Urugnay.
varius Wied. Auss. zw. Ins. i, 189.—Brazil.
variventris Macq. Dipt. Exot. Suppl. ii, 1, 34.—Brazil.
vestitus Wied. Zool. Mag. iii, 42, 2; id. Dipt. Exot. i, 70; id. Auss. zw. Ins. i, 128. —Brazil.
viridiventris Macq. Dipt. Exot. i, 1, 141.—Rio Janeiro.
vittiger Thom. Dipt. Eug. Resa 451.—Gallapagos Islands.
xanthogaster Phil. chil. Dipt. 715.
sp. Will. Dipt. St. Vincent 303, pl. x, f. 78.—St. Vincent.

Walker's Species.

Chrysops fulviceps Walk. List v, 236.—Para.
" *inornatus* Walk. List i, 199.—Brazil.
" *varipes* Walk. List v, 289.—Para.
Diachlorus varius Walk. List i, 209 (*Diabasis*).—Chile.
Dichelacera alcicornis Walk. List i, 190.—Brazil.
" *bifacies* Walk. List i, 191.—Para.
" *multifascia* Walk. Dipt. Saund. i, 68.—Para.
" *prætercuns* Walk. Dipt. Saund. i, 69. pl. ii, f. 6.—So. America.
" *sparsa* Walk. Dipt. Saund. i, 71.—Brazil.
" *T-nigrum* Walk. List v, 325.—Brazil.
" *vacillans* Walk. Dipt. Saund. i, 70.—Brazil.
Hadrus cyanea Walk. List i, 208.—Brazil.
Pangonia badia Walk. List i, 132.—Brazil.
" *basalis* Walk. List i, 133.—Brazil.
" *comprehensa* Walk. Dipt. Saund. i, 11, pl. i, f. 2.—Para.
" *cornuta* Walk. Tr. Linn. Soc. Lond. xvii, 337.—Brazil.
" *exenus* Walk. Dipt. Saund. i, 12.—Brazil.
" *fumifera* Walk. List v, 323.—Brazil.
" *nana* Walk. Dipt. Saund. i, 11.—Brazil.
" *nigrohirta* Walk. List i, 132.—Brazil.
" *notabilis* Walk. Dipt. Saund, i, 18.—South America.
" *ocellus* Walk. List i, 143.—Veneznela.
" *piceohirta* Walk. List i, 132.—Brazil.
" *rufohirta* Walk. List i, 131.—Brazil.
" *tenuistria* Walk. List i, 143.—Brazil.
" *umbra* Walk. Dipt. Saund. i, 19.—Chile.
Tabanus adustus Walk. Dipt. Saund. i, 34.—Colombia.
" *albomaculatus* Walk. List v, 297.—Brazil.
" *albovarius* Walk. List v, 206.—Amazon.
" *attenuatus* Walk. List i, 159.—South America.
" *basi-rufus* Walk. Dipt. Saund. i, 32.—Colombia.
" *chrysoleucus* Walk. List v, 327.—Brazil.
" *compactus* Walk. List v, 222.—Amazon.
" *confinis* Walk. List i, 160.—South America.
" *detersus* Walk. Dipt. Saund. i, 31.—Colombia.
" *discifer* Walk. Dipt. Saund. i, 35, pl. ii, f. 2.—Para.
" *diversipennis* Walk. List i, 165.—Chile.
" *dorsivitta* Walk. Dipt. Saund. i, 39.—South America.
" *ferreus* Walk. List i. 151.—Brazil.
" *ferruginosus* Walk. Dipt. Saund. i, 40.—South America.
" *hirtitibia* Walk. Dipt. Saund. i, 33.—Colombia.
" *innotescens* Walk. List v, 327.—Brazil.
" *lativitta* Walk. List i, 184.—Brazil.
" *latus* Walk. Tr. Linn. Soc. Lond. xvii, 336.—Chile.
" *litigiosus* Walk. Dipt. Saund. i, 37.—South America.
" *luribus* Walk. List i, 162.—Para.
" *manifestus* Walk. Dipt. Saund. i, 41.—South America ?
" *nuntius* Walk. List v, 207.—Brazil.

Tabanus oculus Walk. List i, 157.—Colombia, Honduras.
" *perplexus* Walk. Dipt. Saund. i, 32.—Colombia.
" *plangens* Walk. List v, 199.—Para.
" *primitivus* Walk. List i, 177.—South America.
" *pubescens* Walk. List v, 220.—Brazil.
" *pudens* Walk. Dipt. Saund. i, 36.—Rio Janeiro.
" *repanda* Walk. List i, 190.—Venezuela.
" *rufithorax* Walk. List i, 165.—Brazil.
" *semisordidus* Walk. List v, 208.—Brazil.
" *simplex* Walk. Dipt. Saund. i, 34.—Colombia,
" *submacula* Walk. Dipt. Saund. i, 30, pl. ii, f. 8.—Colombia.
" *subsenex* Walk. Dipt. Saund. i, 38.—South America.
" *subvarius* Walk. List i, 150.—Venezuela.
" *terminus* Walk. List i, 160.—Para.
" *terminatus* Walk. Dipt. Saund. 41.—South America ?
" *trifascia* Walk. Dipt. Saund. i, 37.—Brazil.

The following species have been described by various writers from unknown localities. Doubtless some of them are South American:

Chrysops cincticornis Walk. List. i, 201.
" *geminatus* Wied. Auss. zw. Ins. i, 205.
" *immaculatus* Wied. Auss. zw. Ins. i, 202.
" *lateralis* Wied. Auss. zw. Ins. 209.
" *vulpecula* Wied. Auss. zw. Ins. i, 195.
Ectenopsis vulpecula Macq. Dipt. Exot. i, 1, 116.
Hæmatopota concentralis Walk. List i, 207.
" *serpentina* Walk. Auss. zw. Ins. i, 219.
Pangonia cingulata Wied. Auss. zw. Ins. i, 103.
" *fulvithorax* Macq. Dipt. Exot. i, 1, 113.
" *hebes* Walk. List i, 137.
" *inconspicua* Walk. List i, 136.
" *limbithorax* Macq. Dipt. Exot. Suppl. v, 42.
" *patula* Walk. List i, 144.
Tabanus albilinea Walk. List 1, 176.
" *amabilis* Walk. List i, 134.
" *apicalis* Walk. List i, 176.
" *argentifrons* Walk. List i, 186.
" *cæsius* Walk. List i, 180.
" *castaneorentris* Macq. Dipt. Exot. i, 1, 152.
" *chrysophilus* Walk. List i, 155.
" *circumdatus* Walk. List i, 185.
" *connexus* Walk. Dipt. Saund. i, 62.
" *contactus* Walk. Dipt. Saund. i, 63.
" *cyaneus* Wied. Auss. zw. Ins. i, 152.
" *depressus* Walk. List. i, 167.
" *difficilis* Wied. Auss. zw. Ins. i. 165.
" *ditænia* Wied. Auss. zw. Ins. 1, 182.
" *dives* Walk. List i, 166.
" *dubius* Macq. Dipt. Exot. i, 1, 154.

Tabanus elongatus Wied. Auss. zw. Ins. i, 124.
" *flammas* Walk. List i, 152.
" *formosus* Walk. List i, 148.
" *fulviger* Walk. Dipt. Saund. i, 65.
" *fulvimedius* Walk. List i, 152.
" *fuscinervis* Macq. Dipt. Exot. i, 2, 300.
" *fusconervosus* Macq. Dipt. Exot. i, 1, 150.
" *hispidus* Walk. Dipt. Saund. i, 63.
" *honestus* Walk. Dipt. Saund. i, 64.
" *inconspicuus* Walk. List i, 171.
" *intercuns* Walk. Dipt. Saund. v, 450.
" *janus* Walk. Dipt. Saund. i, 61.
" *lagenaferus* Macq. Dipt. Exot. i, 1, 152.
" *lativentris* Macq. Dipt. Exot. i, 1, 153, pl. xviii, f. 1.
" *ligatus* Walk. Dipt. Saund. i, 59.
" *macula* Macq. Dipt. Exot. Suppl. i, 171, pl. iv, f. 3.
" *marginenervis* Macq. Dipt. Exot. Suppl. v, 47.
" *microcerus* Walk. List i, 150.
" *nepos* Walk. List i, I, 181.
" *nigricans* Wied. Auss. zw. Ins. i, 157.
" *ochraceus* Macq. Dipt. Exot. i, 1, 153.
" *opulentus* Walk. List i, 148.
" *planus* Walk. Dipt. Saund. i, 61.
" *priscus* Walk. List i, 176.
" *redactus* Walk. Dipt. Saund. i, 66.
" *rufoniger* Walk. Dipt. Saund. i, 66.
" *scutellatus* Macq. Dipt. Exot. i, 2. 303.
" *secundus* Walk. List i, 180.
" *senior* Walk. Dipt. Saund. i, 67.
" *sequens* Walk. Dipt. Saund. i, 60.
" *transiens* Walk. List i, 174.
" *variatus* Walk. Dipt. Saund. i, 64.

Family ACANTHOMERIDÆ.

An excellent critique of this family will be found in Biol. C. A. Dipt. i, 63–66, by Osten Sacken.

ACANTHOMERA.

Wied. Dipt. Exot. 60, 1821.

Megalemyia Bigot, Bull. Soc. Ent. Fr. 1880, v (Osten Sacken).

argyropasta Bigot, Bull. Soc. Ent. Fr. 1880, v, et Dipt. Nouv. xxviii, 455 (*Megalemyia*).—Panama.

flavipes Macq. Dipt. Exot. Suppl. ii, 1, 42, pl. i, f. 2.—Brazil.

Frauenfeldi Schiner, Dipt. Novara 78. Roeder, Dipt. Stuebel 1892, 7.—Colombia, Ecuador.

fulvida Bigot, Dipt. Nouv. xxviii, 1880, 457.—Guiana.

Heydenii Wied. Auss zw. Ins. i. 555.—Brazil.

immanis Wied. Auss. zw. Ins. ii, 623.—Surinam.

*picta Wied. Dipt. Exot. i, 61; id. Auss. zw. Ins. i, 108. Macq. Dipt. Exot. i, 1, 171.—Brazil.

seticornis Wied. Auss. zw. Ins. i, 108. Macq. Dipt. Exot. i, 1, 172, pl. xx, f. 1.

rubiventris (*megalemyia*) Bigot, Bull. Soc. Ent. Fr. 1880, v, et Dipt. Exot. Nouv. xxviii, 156 (Osten Sacken).
—Brazil, Guatemala.

vittata Wied. Auss. zw. Ins. i, 109. Macq. Dipt. Exot. i, 1, 172.—Brazil.

RHAPHIORHYNCHUS.

Wied. Dipt. Exot. 59, 1821.

planiventris Wied. Dipt. Exot. i, 60; id. Auss. zw. Ins. i, 106, pl. i, f. 4; id. ii, 622. Osten Sacken, Biol. C. A. i, 66.
? *Raphiorhynchus planiventris* Macq. Dipt. Exot. i, 1, 170, pl. 20, f. 3 (male).
Acanthomera Bigoti Bell. Ditt. Mess. App. 16, f. 10 (female).
" *crassipalpis* Macq. Dipt. Exot. Suppl. ii, 27, pl. i, f. 3. Bigot, Ann. Soc. Ent. Fr. 1881, 458 (*Rhaphiorhynchus*), female.
—Brazil, Surinam, Guiana, Mexico, Guatemala.

Walker has furnished one description in this family.

Acanthomera magnifica Walk. Dipt. Saund. i, 74, pl. i, f. 1.—South America

Family LEPTIDÆ.

TRICHOPALPOMYIA.

Nom. nov. for *Trichopalpus* Philippi, Chil. Dipt. 725. 1865, preoccupied by Rond. Prodr. i, 1856.

cinerascens Phil. chil. Dipt. 725.—Chile.

fulvus Phil. chil. Dipt. 725.—Chile.

obscurus Phil. chil. Dipt. 725.—Chile.

pœcilogaster Phil. chil. Dipt. 725, pl. xxvi, f. 32.—Chile.

CHRYSOPILA.

Macq. Dipt. Nord. Fr. 1827.

apicalis Wulp. Tijdschr. Ent. xxv, 119.—Guadeloupe.

atra Will. Dipt. St. Vincent 304, pl. x, f. 78 bis.—St. Vincent.

americana Schiner, Dipt. Novara 197.—South America.

argyrophora Schiner, Dipt. Novara 199.—South America.

caloptera Schiner, Dipt. Novara 197.—Rio Janeiro.

consanguinea Schiner, Dipt. Novara 199.—Rio Janeiro.

elegans Schiner, Dipt. Novara 198.—Colombia.

irrorata Schiner, Dipt. Novara 198.—South America.

ludens Loew, Wied. Ent. Monatschr. v, 34. Will. Dipt. St. Vincent 303.—Cuba, St. Vincent.

terminalis Macq. Dipt. Exot. Suppl. i, 231. Schiner, Dipt. Nov. 197.—Colombia.

valdiviana Phil. chil. Dipt. 774, pl. xxviii, f. 50.—Valdivia.

* The *Acanthomera picta* Wied. of Bell. Ditt. Mess. i, 76 is, according to Osten Sacken, Biol. C. A. Dipt. i, 68, another species which he describes as *Acanthomera championi*.

DASYOMMA.

Macq. Dipt. Exot. i, 2, 31, 1840.

cærula Macq. Dipt. Exot. i, 2, 31, pl. iv, f. 1. Blanch. Gay. Hist. Chil. Zool. vii, 418, pl. iv, f. 3. Phil. chil. Dipt.—Chile.

LEPTIS.

Fabr. Syst. Antl. 69, 1805.

apicalis Rond. Esame 29.—Brazil.
basalis Phil. chil. Dipt. 773.—Chile.
brasiliens Rond. Oss. Esap. Ditt. 184.
? *Chrysopila analis* Macq. (Rond.).
—Brazil.
caduca Wied. Auss. zw. Ins. i, 579.—Brazil.
capnoptera Wied. Auss. zw. Ins. i, 580.—Brazil.
claripennis Phil. chil. Dipt. 772.—Chile.
fusca Wied. Auss. zw. Ins. i, 227.—Brazil.
grisea Phil. chil. Dipt. 774.—Chile.
hyaloptera Wied. Auss. zw. Ins. i, 226.—Brazil.
lugens Phil. chil. Dipt. 773.—Chile.
nemoralis Phil. chil. Dipt. 772.—Chile.
nigrita Phil. chil. Dipt. 772.—Chile.
præfica Phil. chil. Dipt. 772.—Chile.
setosa Phil. chil. Dipt. 773.—Chile.
subannulata Phil. chil. Dipt. 771.—Chile.

Walker's Species.

Leptis (*Rhagio*) *alumnus* Walk. Dipt. Saund. iii, 163.—South America.
" *clara* Walk. Dipt. Saund. iii, 164.—South America.
" *lucifera* Walk. Dipt. Saund. iii, 164.—Colombia.

The Habitat of the Following is not Known:

Leptis geminata Wied. Auss. zw. Ins. i, 222.
" *vittata* Wied. Auss. zw. Ins. i, 225.

Superfamily Bombylimorpha.

Family NEMESTRINIDÆ.

NEMESTRINA.

Latr. Hist. Nat. Ins. 1802.

sulphurea Wied. Auss. zw. Ins. ii, 631.—Brazil.
vitreipennis Wied. Auss. zw. Ins. ii, 631.—Brazil.

HERMONEURA.

Hirmoneura Meigen, Syst. Beschr. ii, 132, 1820. Emt., *Hirmoneura* Phil. chil. Dipt. 659.
albistria Schiner, Dipt. Novara 109.—Chile.
anthracoides Phil. chil. Dipt. 663.—Chile.
articulata Phil. chil. Dipt. 600. Schiner, Dipt. Novara 109.—Chile.
bellula Phil. chil. Dipt. 662.—Chile.
Bigoti Schiner, Dipt. Novara 108.

Hirmoneura brevirostris Bigot, Ann. Soc. Ent. Fr. Ser. iii. 280, pl. vi. f. 1. Phil. chil. Dipt. 655 (Schiner).
—Chile.

clinerea Phil. chil. Dipt. 660.—Chile.

exotica Wied. Anal. Ent. 20; id. Auss. zw. Ins. i, 245. Macq. Hist. Nat. Dipt. i, 413. F. Lynch A. Notas Dipt. i, 247 (19).—Montevideo, Buenos Aires.

flaviventris Blanch. Gay. Hist. Chil. Zool. Phil. chil. Dipt. 655.—Chile.

fusca Phil. Rond. Dipt. Exot. 51.—Chile.

luctuos Phil. chil. Dipt. 661.—Chile.

maculipennis Macq. Dipt. Exot. Suppl. iv, 1, 403, pl. ix, f. 10. Phil. chil. Dipt. 655.—Chile.

modesta Phil. chil. Dipt. 662.—Chile.

punctipennis Phil. chil. Dipt. 660. Schiner, Dipt. Novara 109.—Chile.

simplex Bigot, Dipt. Nouv. xxiii, 1877, 24.—Chile.

TRICHOPTHALMA.

Westwood, Phil. Mag. 1835.

andina Phil. Anal. Univ. Chil.; id. chil. Dipt. 659 (*Hermoneura*).

baltea Phil. chil. Dipt. 656, pl. xxv, f. 23 (*Hermoneura*).—Chile.

barbarossa Bigot, Dipt. Nouv. Chil. 281. Phil. chil. Dipt. 655 (*Hermoneura*).—Chile.

bombyliformis Schiner, Dipt. Novara 111.—Chile.

* chilensis Macq. Dipt. Exot. ii, 1, 19, pl. ii, f. 8 (*Hermoneura*). Phil. chil. Dipt. 655.—Chile.

commutata Phil. chil. Dipt. 658 (*Hermoneura*).—Chile.

eximia Phil. chil. Dipt. 656 (*Hermoneura*).—Chile.

Landbecki Phil. chil. Dipt. 658 (*Hermoneura*).—Chile.

nemestrinoides Jaenn. Exot. Dipt. 355, pl. 43, f. 6 (*Hermoneura*). Roed. Stett. Ent. Zeit. 1882, 511.

Trichophthalma vicarius Schiner, Dipt. Novara 111 (Roeder). -Chile.

niveibarbis Bigot, Dipt. Nouv. Chil. 282. Phil. chil. Dipt. 655.—Chile.

nubipennis Phil. Rond. Dipt. Exot. 52.—Chile.

Philippi Rond. Dipt. Exot. 53.—Chile.

picta Phil. chil. Dipt. 657 (*Hermoneura*).—Chile.

pictipennis Phil. chil. Dipt. 657 *Hermoneura*).—Chile.

scalaris Bigot, Dipt. Nouv. xxiii, 1877, 19.—Chile.

ursula Phil. chil. Dipt. 659 (*Hermoneura*).—Chile.

zonalis Rond. Dipt. Exot. 52.—Chile.

THE HABITAT OF THE TWO FOLLOWING SPECIES IS NOT KNOWN

Nemestrina albo-fasciata Wied. Auss. zw. Ins. i, 251.

Hermoneura nigripes Macq. Dipt. Exot. ii, 1, 20.

Family ACROCERIDÆ.

PTERODONTIA.

Gray in Griffith's Anim. King. 1832. Westw. Tr. Ent. Soc. Lond. v.

analis Macq. Wipt. Exot. Suppl. i, 226, pl. ix, f. 4.—New Granada.

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* Philippi states that the *chilensis* Macq. of Gay is not that species, but perhaps *commutata* Phil.

dimidiata Westw. Tr. Ent. Soc. Lond. 1876, 513, pl. vi, f. 1.—Colombia.
virmondii Erich. Entomgr. i, 163, 3. Walk. List vi, 347.—Brazil.

PTEROPEXUS.

Macq. Dipt. Exot. Suppl. 1, 1846.

dicolor Macq. Dipt. Exot. Suppl. i, 226, pl. ix, f. 2. Wulp, Tijdschr. Ent. xxvi. 88, pl. x, f. 1.—New Granada.

THYLLIS.

Erichson, Entomgr. 1840.

gracilis Phil. chil. Dipt. 643 (*Megalybus*). West. Tr. Ent. Soc. Lond. 1876, 511, pl. v, f. 4. Schiner, Dipt. Novara 144.—Chile.
obesus Phil. chil. Dipt. 642 (*Megalybus*).—Chile.
Philippi Schiner, Dipt. Novara 144.
Megalybus crassus Phil. chil. Dipt. 642 (Schiner).
—Chile.
pictus Phil. chil. Dipt. 642 (*Megalybus*). West. Tr. Ent. Soc. Lond. 1876, 511, pl. v, f. 4.—Chile.
subcylindricus Phil. chil. Dipt. 644 (*Megalybus*). West. Trans. Ent. Soc. Lond. 1876, 512 (*Megalybus*).—Chile.
tristis Phil. chil. Dipt. 643 (*Megalybus*). West. Trans. Ent. Soc. Lond. 1876, 511, pl. v, f. 5.—Valdivia.

PIALEA.

Erichson, Entomgr. 1840.

lomata Erich. Entomgr. i, 161, pl. i, f. 9. Walk. List vi, 344.
Pialea lutescens West. Tr. Am. Ent. Soc. Lond. 1876, 513, pl. iv, f. 2.
—Brazil.

TERPHIS.

Erichson, Entomgr. 1840.

nodosa Erich. Entomgr. i, 169, pl. i, f. 10. Walk. List vi, 352.—Brazil.

OCHÆA.

Erichson, Entomgr. 1840.

calida Wied. (*Acrocera*) Macq. Dipt. Exot. i, 2, 289, pl. 14, f. 5 (*Eriosoma*).—Brazil.
lugubris Gerst. Stett. Ent. Zeit. 1856, 361.—Bahia.
longicornis Erich. Entomgr. i, 156, 2, pl. i, f. 8. Walk. List vi, 343.—Brazil.

HOLOPS.

Philippi, Chil. Dipt. 1865.

cyaneus Phil. chil. Dipt. 645. Schiner, Dipt. Novara 142.—Chile.
Frauenfeldii Schiner, Dipt. Novara 143.—Chile.
inanis Phil. chil. Dipt. 645. 645.—Chile.

SPHÆROPS.

Philippi, Chil. Dipt. 1865.

appendiculatus Phil. chil. Dipt. 646, pl. xxv, 27.—Chile.

PANOPS.

Lamarck, 1804.

carbonarius Phil. chil. Dipt. 648. Wulp, Tijdschr. Ent. xxv, 83.—Chile, Argentina.

nigripes Phil. chil. Dipt. 648.—Chile.
nigritarsis Blanch. ———. Phil. chil. Dipt. 647.—Chile.
ocelliger Wied. Auss. zw. Ins. ii, 19. Phil. chil. Dipt. 647.—Brazil, Chile.
pullus Phil. chil. Dipt. 648.—Chile.
rufovestitus Blanch. ———. Phil. chil. Dipt. 647.—Chile.

ARRHYNCHUS.

Phil. Stett. Ent. Zeit, 1871.

vittatus Phil. l. c. 1871, 292, pl. iii, f. 6–6*a*.—Chile.

THERSITOMYIA.

Nom. nov. for *Thersites* Phil. Stett. Ent. Zeit. 1871, preoccupied by Pfeiffer, Proc. Zool. Soc. 1855, *Molluska*; also used by Bate, 1857, *Crustacea*; and by Pagenstecher, Froriep's Nat. 1861, *Crustacea*.

jacobæus Phil. chil. Dipt. 1871, 32, p. 292.—Chile.

PHILOPOTA.

Wied. Anss. zw. Ins. ii, 17, pl. ix, f. 1, 1830.

conica Wied. Auss. zw. Ins. ii, 17, 1, pl. ix, f. 1. Macq. Hist. Nat. Dipt. i, 366, 1; id. Dipt. Exot. iii, 171, pl. 14, f. 4. Westwood, Tr. Ent. Soc. Lond. v, 94. Erichson, Entomgr. i, 153. Walk. List vi, 340.—Brazil,
histrio Erich. Entomgr. i, 153, 2. Westw. Tr. Ent. Soc. v, 96. Walk. List vi, 340.—Brazil.
liturata Westw. Tr. Ent. Soc. Lond. v, 94. Walk. List vi, 341.—Brazil.
maculicollis Westw. Lond. and Edinb. Phil. Mag. 1835; id. Tr. Ent. Soc. Lond. v, 93. Walk. List vi, 341.
Philopota vidua Erich. Entomgr. i, 153 (Walk.).
—Brazil.
ovata Westw. Tr. Ent. Soc. Lond. v, 95. Walk. List vi, 341.—Brazil.
semicincta Schiner, Dipt. Novara 144.—South America.
tuberculata Westw. Tr. Ent. Soc. Lond. v, 95. Walk. List vi, 341.—Brazil.

LASIA.

Wied. Analecta Ent. 1824.

æneiventris Westw. Tr. Ent. Soc. Lond. 1876, 509.—Chile.
amethystina Perty, Del. Anim. Art. Bras. 181, pl. xxxvi, f. 7.—Brazil.
auricoma Westw. Tr. Ent. Soc. Lond. v, 93. Walk. List vi, 334.—Brazil.
bicolor Westw. Tr. Ent. Soc. Lond. 1876, 509.—Chile.
cœrulea Rond. Dipt. Exot. 74.
? *Lasia nigritarsis* Macq. (Rond.).
—Chile.
corvina Erich. Entomgr. i, 143, 2. Walk. List vi, 334.—Chile.
cuprea Rond. Dipt. Exot. 75.—Chile.
metallica Rond. Dipt. Exot. 75.—Chile.
nigripes Westw. Tr. Ent. Soc. Lond. 1876, 509.—Chile.
rufipes Westw. Tr. Ent. Soc. Lond. v, 92. Walk. List vi, 335. Schiner, Dipt. Novara 143. Roeder, Stett. Ent. Zeit. 1882, 510.
Panops rufus Phil. chil. Dipt. 643 (Schiner).
Lasia xenea Phil. chil. Dipt. 647 (Roeder).
" " Westw. Tr. Ent. Soc. Lond. 1876, 508 (Roeder).
—Chile.

splendens Wied. Anal. Ent. ii, 3. Wied. Auss. zw. Ins. i, 330.—Brazil.
superba Schiner, Dipt. Novara 143.—Chile.

WALKER HAS DESCRIBED TWO ADDITIONAL SPECIES.

Philopota sobria Walk. Dipt. Saund. iii, 195.—South America.
Exetasis (*Ochea* Schiner) *tumens* Walk. Dipt. Saund. iii, 203, pl. v, f. 1.—Brazil.

THE HABITAT OF THE FOLLOWING SPECIES IS NOT KNOWN.

Acrocera bicolor Macq. Dipt. Exot. Suppl. 227.

Group **HETERODACTYLA.**

Superfamily PROCEPHALA.

Family MYDAIDÆ.

MITRODETUS.

Gerst. Stett. Ent. Zeit. 1868.

Cephalocera Macq. Phil. (Gerst.).
dentitarsis Macq. Dipt. Exot. Suppl. 4, 56, pl. iv, f. 1 (*Cephalocera*). Gerst. Stett. Ent. Zeit. 1868, 76.
Cephalocera albicincta Blanch. Gay. Hist. Chil. Zool. vii, 361, pl. ii, f. 10. Schiner. Dipt. Novara 154 (Gerst.).
Cephalocera elegans Phil. chil. Dipt. 680 (Schiner et Gerst.).
—Chile.
dimidiatus Phil. chil. Dipt. 681 (*Cephalocera*). Gerst. Stett. Ent. Zeit. 1868, 76. —Chile.
leucotrichus Phil. chil. Dipt. 681 (*Cephalocera*). Gerst. Stett. Ent. Zeit. 1868, 76.—Chile.

CERIOMYDAS.

Will. Tr. Kans. Acad. Sci. 1898.

fraudlentus Will. l. c. 29 Ann. Meeting, 58.—Brazil.

MYDAS.

Fabr. Ent. Syst. iv, 252, 1794.

apicalis Wied. Auss. zw. Ins. ii, 2, 629; id. Mongr. 48, 14, pl. 53, f. 14. Westw. Acarna Ent. i, 53, 29. Walk. List vi, 363, 365. Gerst. Stett. Ent. Zeit. 1868, 73, 93. Schiner, Dipt. Novara 153, 2. E. Lynch A. Cat. 152 (44).
Midas bonariensis Serv. Guer. Icon. Anim. pl. 97. Westw. Acarna Fam. Midas. 51. Walk. List vi, 365 (Schiner).
Midas igniticornis Bigot, Ann. Soc. Ent. Fr. v, 288 (Schiner).
Midas lugens Phil. chil. Dipt. 684 (Gerst.).
—Chile, Buenoz Aires.
argyrostomus Gerst. Stett. Ent. Zeit. 1868, 94.—Colombia.
carbonifer Osten Sacken, Bull. Buff. Soc. N. A. 1874, 186; id. Cat. 1874, 82, note, 139 (description is here repeated). Will. Kans. Acad. 29th Ann. Meeting, 55.
New York (Osten Sacken), Brazil (Williston).
cingulatus Will. Kans. Acad. Sci. 29th Ann. Meet. 57.—Conception in Paraguay.

claripennis Will. Tr. Kans. Acad. Sci. 29th Ann. Meeting, 56.—Brazil.

clavatus Drury, Ill. Nat. Hist. i, 103, pl. 44, f. 1 (*Musca*). Gerst. Stett. Ent. Zeit. 1868, 65. Osten Sacken, Cat. 1878, 84. West. Acarn. Ent. i, 51.

Bibio filiata Fabr. Mant. ii, 328; id. Syst. Ent. iv, 252; id. Syst. Antl. 60, 1; id. Syst. Ent. 757, 2. Latr. Gen. Crust. et Ins. iv, 295; id. Dict. Hist. Nat. xxiv, 192, 548. Dueril, Cons. Ins. pl. 48, f. 8. Wied. Dipt. Exot. i, 116, 2; id. Auss. zw. Ins. i, 240; id. Mongr. 43, 8, pl. 53, f. 8.

Nemotelus asiliodes De Geer, Memoir, vi, pl. 29, f. 6.

Midas atratus Macq. Dipt. Exot. i, 11, 2 (Gerst.).

cœrulescens Oliv. Ency. Meth. vii, 83, 3. Gerst. Stett. Ent. Zeit. 1868, 95.

Midas gigantens Thunberg, Vatensk. Acad. Handl. 1818. 246, f. 9. Westw. Arsan. Ent. i, 50, 2. Cuvier, Regn. Anin. Novu. (ed. Masson), Ins. pl. 172, 2. Wied. Dipt. Exot. i, 239; id. Mongr. 38, pl. 52, f. 1; id. Auss. zw. Ins. i, 239. Bond. Oss. Esap. Ditt. 184. Macq. Dipt. Exot. Suppl. i, 189. Walk. List vi, 361.—South America, Brazil.

dives Westw. Arcan. Ent. i, 50, pl. 13, f. 1. Gerst. Stett. Ent. Zeit. 1868, 94. O. Socken, Biol. C. Am. Dipt. iii, 70. Will. Trans. Kans. Acad. Sci. 29th Ann. Meeting 55.—Panama, Brazil (Williston).

gracilis Macq. Hist. Nat. Dipt. i, 274, pl. 7, f. 1. Westw. Acar. Ent. i, 52. Gerst. Stett. Ent. Zeit. 1868, 97.—South America.

heros Perty, Del. Amim. Art. Bras. 183, pl. xxxvi, f. 11. Westw. Fam. Midas. 50. Gerst. Stett. Ent. Zeit. 1868, 94.—Brazil.

leucops Oliv. Nov. Act. Acad. Cur. xv, i. T. ii. Wied. Mongr. 45, 10, pl. 52, 10; id. Auss. zw. Ins. ii, 628, 32. Westw. Arcan. Ent. i, 52. Gerst. Stett. Ent. Zeit. 1868, 96.—Brazil.

mystaceus Wied. Mongr. Midarum, 40, pl. 52, f. 3; id. Auss. zw. Ins. ii, 626. Westw. Fam. Midas. 51. Gerst. Stett. Ent. Zeit. 1868, 94.

Mydas annulicornis Westw. Arcan. Ent. i, 51. Walk. List vi, 464 (Gerst.). —Surinam, Brazil.

nitidulus Oliv. Encycl. Meth. viii, 83, 2. Wied. Mongr. 41, 4, pl. 52, 4; id. Auss. zw. Ins. ii, 626, 28. Westw. Fam. Midas. 51. Gerst. Stett. Ent. Zeit. 1868, 94, 2.

Midas nitida Lichst. Mus. Holthugs 213 (Westw.).
South America, Surinam.

notospilus Wied. Mongr. 52, 20, pl. 54, f. 20; id. Auss. zw. Ins. i, 244, 10. West. Arcan. Ent. i, 54. Walk. Tr. Linn. Soc. Lond. 1837, 339. Gerst. Stett. Ent. Zeit. 101, 38. Will. Tr. Kans. Acad. Sci. 29th Ann. Meeting 57.—Montevideo, Brazil.

Paulseni Phil. chil. Dipt. 682, pl. xxv, 22 (*Apiphora*). Schiner, Dipt. Novara 154 (*Rhopalia*). Gerst. Stett. Ent. Zeit. 1868, 99.—Chile.

rubrocinctus Blanch. Gay. Hist. Chil. Zool. vii, 362. Dipt. Pl. 2, f. 11. Phil. chil. Dipt. 683. Gerst. Stett. Ent. Zeit. 1868, 99, 28.—Chile.

rubidapex Wied. Mongr. 40, 2, pl. iii, f. 2. Schiner, Dipt. Novara 152. Bell. Ditt. Mess. ii, 5. Osten Sacken, Biol. C. A. Dipt. i, 70. Will. Kans. Acad. 29th Ann. Meeting 55.—South America, Guatemala, Mexico.

rufiventris Macq. Dipt. Exot. Suppl. 4, 60, 8. Gerst. Stett. Ent. Zeit. 1868, 99, 26. Will. Kans. Acad Sci. 29th Ann. Meeting 56.

Mydas militaris Gerst. Stett. Ent. Zeit. 1868, 99, nom. nov. pro *Mydas rittatus* Macq. Dipt. Exot. Suppl. 4, 60, pl. iv, f. 6. Bell. Ditt. Mess. ii, 7. Will. Kans. Acad. Sci. 29th Ann. Meeting 56.

Mydas ventralis Gerst. Stett. Ent. Zeit. 1868, 102, nom. nov. pro *Mydas ruficentris* Loew, Berl. Ent. Zeit. x, 14, preoc. Macq. vide supra.—Brazil, Mexico, California.

testaceiventris Macq. Dipt. Exot. Suppl. 4, 61, pl. 5, f. 6, Gerst. Stett. Ent. 1868, 99, 27.—Uruguay.

virgatus Wied. Mongr. 51, 18, pl. 54, f. 19; id. Auss. zw. Ins. ii, 630, 35. West. Arcan. Ent. i, 53 Gerst. Stett. Ent. Zeit. 1868, 97, 15.—Brazil.

sp. Will. Kans. Acad. Sci. 29th Ann. Meet. 56.—Brazil.

DOLICHOGASTER.

Macq. Dipt. Exot. Suppl. iii, 178, 1848.

iopterus Wied. Auss. zw. Ins. i, 241. Roeder, Stett. Ent. Zeit. 1883, 426. Will. Kans. Acad. Sci. 29th Ann. Meet. 57.

Dolichogaster brevicornis Wied. Mongr. 45, pl. 53, f. 9; id. Dipt. Exot. i, 111; id. Auss. zw. Ins. i, 241. Westw. Acarn. Ent. i, 52 (*Mydas*). Macq. Dipt. Exot. Suppl. 3, 17, pl. ii, f. 2. Gerst. Stett. Ent. Zeit. 1868, 103. —Brazil.

MEGASCELUS.*

Phil. chil. Dipt. 1865.

nigricornis Phil. chil. Dipt. 683.

The Habitat of the Following is Not Known.

Mydas atratus Macq. Dipt. Exot. i, 2, 127.

" *continuus* Macq. Dipt. Exot. Suppl. ii, 2, 177, pl. ii.

" *fasciatus* Wied. Mongr. 50, pl. 54, f. 7; id. Auss. zw. Ins. i, 243.

" *politus* Wied. Monor. 43, pl. 53, f. 7; id. Auss. zw. Ins. i, 240. Westw. Fam. Midas. 51. Gerst. Stett. Ent. Zeit. 1868, 94, 1.

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* The family location of this genus is a matter of some doubt. Schiner (Dipt. Novara 151) states that it is the same as *Dolichogaster;* but Gerstaecker (Stett. Ent. Zeit. 70) excludes it altogether from the family.

SYNONYMICAL NOTES ON BEMBIDIUM AND DESCRIPTIONS OF NEW SPECIES.

BY ROLAND HAYWARD.

Since the publication of my paper on the North American species of *Bembidium*,* I have had, through the kindness of Mons. René Oberthür, of Rennes, an opportunity to study the types of those species of that genus described by Baron Chaudoir which were then unknown to me, and the original descriptions of which were published in the appendix. I have thus been enabled to determine their synonymy, which entails, however, but few changes in our nomenclature. This it is proposed to give in the present paper. One new species has also been described, which, although represented by an unique in my cabinet, seems too distinct to remain longer without a name. My collection still contains several examples which cannot be satisfactorily placed, but as they are mostly uniques and are all referable either to group *planatum* or group *variegatum*, both very troublesome ones, it seems best to let them remain undescribed until such time as the limits of variation shall be more clearly determined in the groups to which they belong.

B. æneum n. sp.—Form robust, very convex. Color bronzed, somewhat shining, the elytra with the margin and punctures greenish; surface alutaceous. Head slightly wider than the thorax at apex; eyes large, prominent; antennæ about as long as the head and thorax, piceous, the basal joints paler; palpi testaceous, darker towards the tip. Prothorax subtrapezoidal, very distinctly wider at base than apex, about one-half wider than long; apex bi-emarginate, the anterior angles prominent and acute; transverse impressions obsolete; median line very fine, entire; basal impressions very feeble, single; surface finely rugose at base and apex; base truncate, obliquely so each side; sides very finely margined, slightly arcuate in front, very feebly sinuate in front of the hind angles, which are subrectangular and not carinate. Elytra about one-half wider than the thorax, oblong-ovate, subparallel, deeply striate; humeri subangulate; striæ punctate, scarcely less deeply towards the apex, entire, the fifth slightly grooved at tip, the eighth distinct from the margin; dorsal punctures two, situated on the third interval near the third stria, the first about the middle, the second about one-fourth from apex; intervals slightly convex. Body beneath black, tinged with greenish, shining. Legs testaceous. Length .17 inch; 4.25 mm.

* Tr. Am. Ent. Soc., 1897, xxiv, pp. 32–143.

A very singular little species belonging to the group *coxendix* of my monograph. It seems best placed between *sculpturatum* and *robusticolle*.

It is known to me by one female from Cedar Co., Iowa.

B. dilatatum Lec.

B. platyderum Chaud. is synonymous with this species.

B. rufotinctum Chaud.

This name must be substituted for *blanchardi* Hayw. A comparison of the types shows that the two are identical. Under his description Chaudoir gives no locality, merely stating that it was received from Guex. The "faux air de *planum*" mentioned is quite expressive.

B. viridicolle Laf.—Form moderately elongate, slightly depressed. Color dark æneous or nearly black, the head and thorax distinctly tinged with green and strongly alutaceous, the elytra more finely alutaceous, with an ill-defined marginal spot about one-third from base extending inwards as far as the fifth interspace and also for some distance along the margin, a more distinct apical spot and the inflexed portion pale. Head as wide as the thorax at apex; eyes large, prominent; frontal grooves distinct; antennæ about one-half as long as the body, rufous, the outer joints scarcely darker; palpi rufous. Prothorax subcordate, about one-half wider than long, distinctly narrower at base than apex; apex subtruncate; transverse impressions nearly obsolete; median line very fine, abbreviated at each end; basal impressions distinct, bistriate; base subtruncate; sides with the margin very narrowly reflexed, strongly arcuate, sinuate in front of the hind angles, which are subrectangular and very finely carinate. Elytra oblong-ovate, about one-half wider than the thorax, finely striate; striæ distinctly punctate to behind the middle, the first, second and fifth entire, the latter grooved at tip; intervals nearly flat; dorsal punctures on the third interval, the first about one-third from base, the second about one-third from apex. Body beneath nearly black. Legs rufous. Length .20 inch; 5 mm.

The apical spot referred to in the description is apparently composed of a subapical and an apical one united, that of the two elytra together having somewhat the form of a horse-shoe, as remarked by Chaudoir.

It is closely allied to *cordatum* and should be placed in our lists between that species and *nubiculosum*. To the kindness of Mons. Oberthür I am indebted for an opportunity of studying La Ferté's type.

I have compared an example of *hamiferum* Chaud., received from Mons. Oberthür, with the type of *viridicolle*, and can detect no difference between them. As the specimen of *hamiferum* had been

carefully compared with Chaudoir's type, the latter must be regarded as a synonym of the present species.* Both were described from Texas, and the only two examples known to me are from that State.

B. oberthüri n. sp.

This name is proposed for the species which has heretofore been regarded in this country as *viridicolle* Laf., and to which that name was assigned in my paper on the North American species of the genus. The error was pointed out to me by Mons. Oberthür, and it is with great pleasure that I dedicate the species to him as a slight token of regard.

B. timidum Lec.

To this species *B. sordidulum* Chaud. must be referred.

B. contractum Say.

B. pilatei Chaud. is synonymous with this species.

B. constricticolle Hayw.

The arrangement of the dorsal punctures in this species is wrongly described in my paper on *Bembidium*. The two specimens known to me, when the description was written, were both badly rubbed, and the arrangement of the punctures is seen, on studying other material, to be practically the same as in *semistriatum* Hald. This is also observable in the type when examined under higher power. It should therefore be referred to the same group as the latter species.

* Since writing the above I have received word from Mons. Oberthür that *hamiferum* and *viridicolle* seem to him to belong to the same species.

NEW AND LITTLE KNOWN DIPTERA FROM THE ORGAN MOUNTAINS AND VICINITY IN NEW MEXICO.

BY C. H. T. TOWNSEND.

The following are descriptions and notes made some time since, which it is thought desirable to publish at the present time:

Systropus ammophiloides n. sp.

Three males, September 3rd, 4th and 5th; and one female, September 5th, all on flowers of *Lippia wrightii*, at La Cueva (Riley's Ranch), Organ Mts., N. M., about 5300 ft. Differs from Loew's description of *macer* as follows:

Length of both sexes 14 to 14.5 mm. not including antennæ, which are 3 mm., and not making allowance for curvature of abdomen. Length of wing 8 to 10 mm. It is thus a larger, more robust species. Length of head and thorax taken together, 4 to 4.75 mm. Length of antennæ, as given above, was taken straight, not following the angle. Third antennal joint 2.25 to nearly 3 times length of second. Spots of humeri and hind angles of thorax bright yellow, instead of white. First abdominal segment sometimes rufous on posterior half, more often with but little or no rufous. Last three segments always black, as in *macer*. Coxæ all black. Anterior femora rufous in middle on underside, all the rest of legs black, except white and yellow pubescent lines on front and middle tibiæ and metatarsi. Halteres soft brownish, whole anterior side of knobs and distal half of posterior side yellow. Wings pale fuscous, a distinctly deeper fuscous occupying costal cells, proximal two-thirds or more of marginal cell, proximal half of first submarginal cell, and vicinity of anterior cross-vein. Another area of deeper fuscous occupies proximal half of second basal cell, usually continued along inner border to posterior cross-vein, which is also clouded with it. Sometimes the deeper shading is subobsolete or of less extent in marginal and submarginal cells. Origin of third vein still more deeply clouded, showing a dark brown spot, and this is usually the case with the anterior cross-vein. First antennal joint somewhat sparsely clothed with fine white pubescence, sometimes showing as yellowish, second joint thickly clothed with shorter black pubescence. The pubescence of first joint appears black if not examined with proper light.

The hind legs are excessively elongate, being 18 to nearly 22 mm. long. The sexual differences pointed out by Osten Sacken in the Biologia are exactly the same in this species.

This is a most interesting fly, as it imitates very closely a common *Ammophila*, which visits the same flowers of *Lippia wrightii*, and which Professor Cockerell says is probably *A. vulgaris* Cr. In his

Western Diptera, Osten Sacken records two cases of *Systropus* being bred from larvæ of *Limacodes*. Doubtless all the species of *Systropus* mimic more or less closely some species of aculeata hymenoptera, as does the present certain species of *Ammophila*. Certainly the close imitation of *Ammophila* by the present species must mean something, either that the *Systropus* is parasitic in its larval state in *Ammophila* (larva, pupa or adult), or possibly that it is parasitic in some of the larvæ with which *Ammophila* stores its nests. The latter supposition would explain the above records by Osten Sacken of its parasitism of *Limacodes*. The long hind legs are an important part in the mimicry. The *Systropus* allows them to hang down when flying, just as does *Ammophila*.

The American species of *Systropus* so far known are divisible into two groups, corresponding apparently to the temperate and tropical faunal regions, the temperate group characterized by the abdomen being black at both ends and red in the middle, the five species of which are all from the United States; the other characterized by the abdomen not being so colored, the ten species of which occur collectively from Mexico to Brazil. For a synoptic table of the neotropical species, see Osten Sacken, Biologia C. A. Dipt. 1, p. 157, where this division of groups is adopted. The following table will separate the U. S. species, but it also, like Osten Sacken's, is made from descriptions and must be used with caution:

Thorax with humeral spots; abdomen red except base and tip..... 2.
Thorax without humeral spots; abdomen black with red in middle and of less extent .....4.
2. Humeral spots white; front coxæ red, middle ones red and black.
macer Loew.
Humeral spots red or yellow, all the coxæ black .....3.
3. Legs extirely black, humeral spots red like abdomen, wings with only the veins infuscate, third antennal joint not twice as long as second.
angulatus Karsch.
Front and middle tibiæ and metatarsi striate with white and yellow pubescent lines, humeral spots bright yellow, strongly contrasted with color of abdomen; wings distinctly infuscate with costal portion more deeply so; third antennal joint between 2 and 3 times as long as second.
ammophiloides n. sp.
4. Legs wholly black..... **infuscatus** Karsch.
Legs striate, with yellow anteriorly..... **imbecillus** Karsch.

Volucella opalescens n. sp.

One female, La Cueva (Riley's Ranch), Organ Mts., September 4th, in flowers of *Datura meteloides* before sunrise. Differs from

Williston's description of *chætophora* (Syn. Syrph., pp. 149–50), as follows:

Length about 8 mm. Face, front and antennæ brownish yellow, the front appearing yellowish brown when viewed from above, the orbits with a very narrow, inconspicuous, white pollinose line. Face strongly produced downward, lower border of cheeks forming an angle of about 120 degrees with plane of occiput. Cheeks greenish black on posterior portion next occiput. Face well hollowed below antennæ, tubercle rounded-obtuse but conspicuous. Third antennal joint rather elongate, four or more times as long as second, wide, but little narrowed distally, arista concolorous with antennæ. Pile of front and face brownish yellow. Dorsum of thorax and scutellum opalescent, milky, greenish blue or milky olive, with violet to cupreous metallic reflections, the scutellum more darkly blue, with violet or purplish reflections. The prescutellar row of bristles is weak but distinct. Scutellum with six to eight bristles. Pile of thorax and scutellum yellowish like that of front. Abdomen wholly deep shining bluish green. Legs blackish or brown; knees, metatarsi and next tarsal joint yellowish. Wings clear, bases and stigmal area pale yellowish, following distal half third costal cell to its extremity; stigma and anterior cross-vein brown. Pile of abdomen short, even, close, appearing whitish from above but brownish yellow from sides, giving no fasciate appearance to abdomen which is uniformly colored and shining. The width of abdomen is about equal to its length, measuring 4 mm. in both dimensions. The pleuræ are rather yellowish brown. Second vein regular. Marginal cell closed and short petiolate. Anterior cross-vein rather near base discal cell.

This is a most interesting species, occurring as it does at the western base of the Organ Mts., for it belongs to the neotropical group of *V. amethystina*, as defined by me in Ann. and Mag. of N. H., ser. 6, vol. 20, July, 1897, pp. 25–30, where five similar species taken by me in the State of Vera Cruz, near Jicaltepec, on flowers of *Cordia* sp., are described. It is more nearly allied to *opalina* and *chætophora* than to the others. It differs from them in having the face produced downward into an acute cone, not right-angled conical as in those species; and in the third antennal joint not being narrowed on distal half.

Volucella haagii Jaenn.

A small female specimen, measuring only 11.5 mm., taken September 5th, at La Cueva, Organ Mts., in flower of *Datura meteloides* before sunrise. Other larger specimens were seen on several previous mornings, from daylight to sunrise, in the same flowers, but were not caught owing to their extreme wariness.

Conops auratus n. sp.

Three males and one female, La Cueva (Riley's Ranch), Organ Mts., about 5300 ft.; the males August 29th, September 4th and

5th; the female September 5th. All on flowers of *Lippia wrightii*, the August 29th specimen collected by Professor Cockerell, the others by myself.

Male and female: related to *C. excisus* Wied. (Fla., Ga., N. Carolina) and *rufus* Will. (Brazil). Differs from Williston's description of *excisus* (Tr. Conn. Acad. iv, 1882, pp. 330–331) as follows:

Cheeks with a large brown spot taking up their whole area, except outer posterior corner. Proboscis more than twice length of head, head being about 2.5 mm. and proboscis 5.5 mm. Third antennal joint wholly black (female specimen) to distal half black (two male specimens, the other male having it black except reddish at base). Second antennal joint about as long as third including whole of style. The second joint of style is large and subtriangular in outline, the enlargement projected inwardly, forming a conspicuous process on inner side of style. The vertex and front are of much the same yellow as face, but the vertex is tinged with reddish, and the front on median line and sides posteriorly is tinged with blackish. Occiput deep reddish, yellowish on inferior third, orbital line of yellowish pollen extending broadly across below vertex present. Ground color of thorax deep reddish, the black appearing in three heavy vittæ, the median one extending to anterior border of thorax between the golden yellow humeral spots and being more or less split at posterior end, which continues only to point halfway between transverse suture and scutellum. The lateral vittæ extend from humeral spots to point three-fourths or more between transverse suture and scutellum, and are narrowly interrupted at transverse suture. Scutellum same reddish as thorax; metanotum reddish, upper half of disk golden yellow pollinose, lower half blackish, sides of metanotum golden pollinose, except that pollen appears faint on upper hollowed half. Narrow lateral border of thorax golden, showing in a line continued back from humeral spots to wing bases. The golden spots of thorax, etc., are apparently as in *excisus;* in all the specimens except one male there is a trace of golden pollen on median line on posterior margin of mesoscutum. Abdomen same reddish as thorax, first segment with narrow anterior margin of black, rest of first segment golden pollinose, with silvery on sides; second segment golden pollinose on posterior third or more, extending on to anterior margin of third segment; third segment of male blackish across middle, the black merging insensibly in front into the reddish, but changed abruptly behind into golden pollinose, which takes up posterior third or more of length of segment. Fourth, fifth and sixth segments of male wholly densely golden pollinose, except that fourth shows the reddish ground color narrowly, sometimes more widely, on anterior margin. Female differs by having third segment without black across middle or only a faint tinge of it, the golden fascia being subarcuate, with posterior border behind it blackish or brown, the latter color thus having arcuate anterior border and being widened in middle and tapered laterally; fourth segment reddish, with rather narrow blackish or brown posterior border, in front of which is narrow golden pollinose fascia bulged anteriorly on median third; fifth, sixth and seventh segments wholly densely golden pollinose like fourth to sixth of male, but the reddish shows on one side on anterior margin of fifth segment, which, by the way, is very short in female and bears on underside a very large and stout process slightly curved and measuring 2 mm. in length. Sixth segment of female about as long as two preceding seg-

ments taken together. Legs yellowish red, outside of all the tibiæ white pollinose, but hind pair sometimes very faintly so. Outside of coxæ golden whitish, posterior coxæ silvery. Claws yellowish, with black tips, pulvilli yellow. Wings clouded with fuscous or blackish on anterior (outer) half as follows: costal cells clear, auxiliary vein and cross-vein at each end of it yellowish; all the basal cells clear; discal cell clear, except black cloud along whole posterior margin, this cloud widest in middle, its proximal half filling almost exactly posterior (inner) half of proximal half of cell. First posterior cell with a spurious vein, abruptly clear behind (inside) of this vein, otherwise wholly clouded, except that the clouding fades into a nearly clear rather wide border along last section of fourth vein, this clear area ending distally in a point. Second and third posterior cells, anal angle and alula wholly clear. Veins along basal (including anal) cells yellowish. Marginal and submarginal cells wholly blackish. Halteres bright yellow. Sexual processes of female on underside of abdomen, with space between them, black, especially the smaller anal one, the latter red on base, the large anterior one reddish on base and tip. Length of males 14.5 to 15.5 mm.; of female 13.5 mm. Length of wing of male 10 to 11 mm.; of female 9.5 mm.

This species approaches both *excisus* and *rufus* in the large ventral process of female, as well as in the prevailing reddish and yellow colors and picture of the wings.

Rhaphiomidas xanthos Towns.

Three specimens, September 10th; one male and one female, mesa east of Las Cruces in the *Larrea* belt, and one female dead on sidewalk in town of Las Cruces. This is the first record of the occurrence of the family Apioceridæ in New Mexico.

The female from the mesa measures 24 mm. in length not including antennæ or proboscis. It has the second, third and fourth abdominal segments clouded laterally, and on median line with brown, the fourth more extensively so laterally than the others. The fifth, sixth and seventh segments are brownish in both females. The other female (the one found dead on sidewalk) measures only 19.5 mm. in length (excluding antennæ, etc.), and has abdominal segments 2, 3 and 4 wholly yellowish as in the male specimen. The male measures 20.5 mm. in length not following curvature of abdomen, and has abdominal segments 2 to anal wholly yellowish, except that 2 has a median anterior spot of dark brown. All three of the specimens have first abdominal segment blackish, this color nearly concealed by rather dense white pile, the pile of the other segments being yellowish. The eyes are vivid bright green. The last three abdominal segments in the females are almost bare of pile compared with the other segments, and appear glabrous.

It will be seen from the above notes that the female from the

mesa approaches *acton* Coq. in having brown on second to fourth segments, though the brown does not appear as a front border to the segments as in that species. It is best referable to *xanthos* at present, but may prove to be a good variety on the collection of further material. The male and the other female agree perfectly, both in size and abdominal coloration, the anal segments of male being also yellowish and the hypopygium brownish yellow.

The occurrence of the family Apioceridæ in New Mexico is of extreme interest, and particularly so is the occurrence of the genus *Rhaphiomidas;* not only the genus, but also the family so far as North America is concerned, being heretofore known only from California and Lower California. It should be mentioned that Professor Cockerell caught an "asilid-like fly" on the sand hills near Mesilla Park, N. M., on May 21st, which was determined by Mr. D. W. Coquillett as *Apiocera haruspex* O. S. The specimen was not returned, and is now in the National Museum. I am inclined to doubt the determination until it is verified or other specimens are collected in that locality.

NEW SPECIES OF GEOMETRIDÆ FROM TROPICAL AMERICA.

BY W. SCHAUS.

Part 1.

Subfam. Boarmiinæ.

Opisthoxia claudiaria.—Vertex light brown, collar white. Thorax brownish, abdomen the same, with a white transverse line near base. Primaries reddish brown; the costa to near apex broadly creamy white; the outer half of inner margin finely silvery white; fringe yellowish. Secondaries reddish brown; the inner margin finely white; a silvery white transverse inner line, very broad on costa; a fine silvery violaceous line follows the outer margin, circles inwardly at apex and crosses wing to anal angle; between veins 6 and 7 a black spot, containing silvery scales and circled with white. Expanse 32 mm.

Hab.—Rio Janeiro.

Ophthalmophora farantes.—Vertex whitish; collar grey; abdomen dark grey at base, otherwise light brown. Wings with a dark grey outer line, angled below subcostal vein on primaries, then perpendicular to vein 2, thence it becomes white and is inwardly oblique to the inner margin of secondaries near base, the space within this line is dark grey, slightly mottled with white in the cell of primaries anteriorly; the costa is entirely white to apex; the space beyond the line is reddish brown, lightest on secondaries; the outer margin of primaries is somewhat streaked with white; the secondaries are powdered with red scales, and there is a fine subterminal silvery line inwardly curving at apex and descending to vein 6; a small black spot with silvery scales between veins 6 and 7; fringe of wings pale yellow. Underneath wings are whitish grey. Expanse 35 mm.

Hab.—Castro, Parana.

Ophthalmophora crœsaria.—Frons and palpi yellow. Thorax violaceous; abdomen light brown. Primaries violaceous brown, costal margin, apex, part of the outer margin and outer half of inner margin yellow. Secondaries reddish brown, mottled with yellow along the outer margin; a yellow transverse basal band; an outer row of four black spots containing silver scales, and circled with yellow which is again finely outlined with black; a subterminal silver line. Expanse 24 mm.

Hab.—Sao Paulo, S. E. Brazil.

Ophthalmophora dora.—Head buff, color greyish. Thorax and abdomen yellow. Primaries bright yellow, with some reddish buff striæ, forming an outer and subterminal shade; costa broadly dark brown; a few scattered silver scales about the basal half of inner margin. Secondaries bright yellow, with light brown striæ and more numerous silver scales; at apex a reddish buff spot

partly outlined in silver and containing a black point with some silver scales. Some terminal black and silver points. Expanse 28 mm.

Hab.—Castro, Parana.

Argyrotome mexicaria.—Body light grey. Wings silvery grey, with a few scattered metallic scales; primaries with the costa, fine, buff; an elongated discal spot buff, speckled with silver scales; a subterminal buff band not reaching the costa and outwardly spotted with silver between the veins, this band preceded by a faint darker grey shade, the outer margin streaked with darker grey. Secondaries: a darker grey discal spot, a subterminal buff line outwardly bordered with silver, a terminal buff line inwardly spotted with black and silver. Expanse 26 mm.

Hab.—Jalapa, Mexico. Allied to both *A. prospectata* Snell. and *A. melæ* Druce.

Byssodes bimacula.—White. Primaries: the costa with numerous black striæ; the inner first very oblique, the median less so, the outer and subterminal lines nearly straight, a fine terminal darker brown line. Secondaries with the inner median and subterminal lines of primaries continued and converging at a yellow space about prolongation of wing, this yellow space contains two black spots, the terminal line geminate. Expanse 32 mm.

Hab.—Peru. Very similar to *B. alodia* Dogn., but differs in more extended yellow space on secondaries and having two instead of a single black spot.

Bapta innoma.—Vertex dark brown. Body white. Wings yellowish white, with a few scattered brown scales, a fine dark outer line crosses both wings. Costal margin of primaries finely yellow. Fringe white. Expanse 22 mm.

Hab.—Castro, Parana. Allied to *Bapta circumvallaria* Snell.

Bapta pomina.—Vertex brown. Body white. Wings silvery white, with a few scattered brown scales, chiefly on outer margins, a black point in the cells, an outer fine brown lunular line. Primaries with a trace of median line above inner margin and the costa finely yellowish. Expanse 22 mm.

Hab.—Orizaba, Mexico.

Bapta fidrata.—Vertex brown. Body buff. Wings light buff, thinly speckled with slightly darker scales, an indistinct fine outer line crosses both wings. The primaries with the costa finely brown, a small dark point in the cell. Expanse 23 mm.

Hab.—Castro, Parana. Allied to *Bapta hebetior* Warr., which I have, unfortunately, redescribed as *B. ruptilinea*.

Bapta griseata.—Vertex brown. Body and wings white, thickly covered with bluish grey scales. The costa of primaries narrowly light reddish brown, a dark point in the cell, and indistinct, outer and subterminal lines. Underneath white, the costal half of primaries shaded with light brown. A terminal black line above and below. Expanse 29 mm.

Hab.—Bolivia.

Bapta testacea.—Vertex light brown. Body and wings yellowish white, the latter with a few brownish scattered scales, a very indistinct outer line, a black point in the cells, and a fine terminal brown line. Expanse 27 mm.

Hab.—Guadalajara, Mexico.

Deilinea dubitaria.—Head yellow. Body white. Wings silvery white, with some faint grey striæ chiefly about the outer margins, the striæ also forming an indistinct straight outer line and wavy inner line, a fine terminal dark line. Expanse 33 mm.

Hab.—Bolivia.

Diastictis paulensis.—Wings whitish grey, with a few pale brown specks and striæ. Costal margin of primaries with four dark brown spots and very faint traces of inner, median and outer lines, and an interrupted dark terminal line. Underneath buff. Primaries with the disk suffused with brown and faint dark median, outer and subterminal lines. Secondaries with some outer blotches of brownish scales. A terminal row of black points on both wings. Expanse 27 mm.

Hab.—Sao Paulo, S. E.

Myrtela coanaria.—Vertex ochreous. Thorax and abdomen greyish white. Wings white irrorated with grey scales, lines greyish brown, the median line angled at costa then inwardly oblique, the outer line from costa near apex to inner margin at two-thirds from base, the outer line continued on secondaries to middle of inner margins; a darker terminal line. Expanse 38 mm.

Hab.—Coatepec, Mexico.

Semiothisa evanaria.—Very pale buff, with the shadings slightly darker. The surface of the wings thickly speckled with light brown, a narrow wavy median shade, the outer line very fine, followed by a broad branching to the outer margin below apex of primaries, where the excision is slight. Underneath yellowish, with the median and outer shades very distinct reddish brown; on secondaries a small dark brown discal spot. Expanse 32 mm.

Hab.—Petropolis, Brazil.

Semiothisa dentilaria.—Body greyish brown. Primaries moderately excised. Secondaries slightly dentate. Wings whitish, thickly speckled with grey, lines reddish brown, basal and median lines wavy, outer line finely dentate, followed by a broad dark greyish shade, outer margins mottled with white, a terminal dark line. Underneath lighter, the lines indistinct, the shade beyond outer line reddish brown. Expanse 21 mm.

Hab.—Orizaba, Mexico.

Semiothisa mayana.—Whitish, speckled with grey and black, lines yellowish, with black points on veins, very fine, wavy, starting from brown spots on costa, the outer line followed by a larger brown spot on costa resting on some black scales below vein 7, a geminate black spot at vein 4, the outer margin dark grey. Excision below apex moderate. Underneath whitish, speckled with grey,

the veins yellowish, distinct black points in cell, the subterminal shade distinct brownish, some white at apex of primaries. Expanse 23 mm.

Hab.—Orizaba, Mexico.

Semiothisa josefaria.—Greyish white, with some slightly darker speckles; lines darker, very fine, wavy, indistinct, the outer line spotted with brown on veins 3 and 4 and followed by a brown spot; the costal spots brownish, the subterminal spots the most conspicuous; a dark grey subterminal shade; a terminal dark line. Underneath yellowish white, speckled with gray, the lines more distinct; the subterminal shade dull dark grey. Expanse 22 mm.

Hab.—Orizaba, Mexico. Close to *S. æmularia* Walker.

Semiothisa ramparia.—Primaries with outer margin straight below apex. Secondaries rounded. Wings pale buff, speckled with light grey; lines fine, greyish, inner line straight, median line slightly oblique, outer line slightly rounded below costa, then parallel with outer margin and dividing two velvety black spots, one between veins three and four, the other between veins six and seven. Secondaries with the lines parallel and straight from costa to inner margin. Underneath yellowish, thickly speckled with grey: the outer line on primaries closely followed by another line from vein 3 to apex. Expanse 24 mm.

Hab.—Castro, Parana.

Semiothisa valmonaria.—♀. Primaries faintly excised below apex. Wings light brown; lines very fine, slightly darker, with dark brown points on veins. Primaries: costa greyish, with three large brown spots; some whitish scales before apex; a terminal dark line. Underneath ochreous, thinly speckled with brown; the median line distinct; a subterminal wavy dark line, followed at apices by dark gray patches containing white scales. Expanse 30 mm.

Hab.—Jalapa, Mexico.

Semiothisa discata.—Light violaceous brown. Primaries with the costa greyish, with three brown spots; some whitish scales and a yellow streak at apex; lines very fine and indistinct, yellowish brown, with dark spots on veins. Secondaries somewhat speckled with black, the lines somewhat more distinct; both wings with a large blackish brown spot between veins 2-5, and lower outer portion of cells, divided into four by the veins, which are pale buff where dividing the spot; excision below apex moderate. Secondaries with margins dentate. Underneath yellow, speckled with brown; lines indistinct, except a subterminal wavy dark brown line; outer margin brownish about apex of primaries, with a white speckled streak; some white spots at apex of secondaries. Expanse 29 mm.

Hab.—Costa Rica.

Semiothisa poltronaria.—Light greyish brown, somewhat speckled with darker brown; four brown spots on costa of primaries at origin of lines; basal, median and outer lines fine, slightly darker than ground color, spotted with black on the veins; outer margins slightly darker; fringe at excision below apex, which is deep, dark brown; no basal line on secondaries; small discal spots in cells. Underneath mottled white and yellow, thickly speckled with dark

brown; lines dark brown, the outer line followed by a straight brown line, outwardly shaded with brown towards costa. Expanse 34 mm.

Hab.—Peru.

Semiothisa falconaria.—Apex of primaries broad, produced, excision deep. Wings whitish speckled with grey and clouded with olivaceous gray beyond outer line. Primaries with three brownish spots on costa; basal and median lines fine, wavy, olivaceous grey; outer line angled below costa and above inner margin, otherwise straight, velvety brown, followed by two brown spots between veins 3 and 5. On secondaries the outer line is usually very faint and indistinct. Underneath white, speckled with grey and reddish brown; discal points distinct; veins reddish brown; the outer line followed by greyish shadings; the apices broadly reddish brown. Expanse 27 mm.

Hab.—Jalapa, Mexico.

Semiothisa finaria.—♀. White, speckled with light and dark grey; oblique grey discal spots; lines brownish grey, distinct. Primaries: basal line angled below costa, then straight; median line nearly straight; outer line slightly wavy, heavily marked with dark brown at vein 4, and followed by a geminate black spot, beyond the outer line a narrow, dull grey line to inner angle, terminal line brown, excision moderate. Secondaries with the median line wavy, the outer line dentate. Underneath white, thinly speckled with brown; the lines fine, greyish brown, distinct, the outer line followed by a brown band having a paler centre; a dark grey shade at excision. Expanse 25 mm.

The ♂ is paler and has no brown spots on or after outer line.

Hab.—Castro, Parana.

Semiothisa tristaria sp. nov.—Primaries acute, hardly excavated. Secondaries with an angle on outer margin. Body buff. Wings light buff, irrorated, with brownish and cream color scales; a basal darkish line on the primaries, forming a slight angle in the cell; an indistinct median shade on both wings, the outer line fine, wavy, light brown, with a brown point on each vein, and followed on the primaries by a straight dark but narrow shade; a minute discal point on each wing, a terminal row of fine dark points. Underneath similar, the markings more distinct, as the ground color is whiter, especially at the apex of the primaries and outer margin of secondaries. Expanse 28 mm.

Hab.—Castro, Parana.

Homochlodes parita.—Outer margin of wings slightly crenulate. Wings light brown, with a few minute black specks; discal spots black, with white centres; a subterminal and a terminal row of black points. Primaries with an inner row of black points on subcostal, median and submedian veins. Underneath brownish grey, with small black discal spots and an outer row of black points. Expanse 25 mm.

Hab.—Coatepec, Mexico.

Homochlodes orina.—Buff, thickly speckled with black and brown scales; discal points black, with white centres; an outer fine black line punctiform

on veins. Primaries with an inner slightly curved line, also punctiform on veins. Underneath greyish brown, thickly speckled with black; the discal spots and outer line as above. Expanse 27 mm.

Hab.—Jalapa, Mexico.

Homochlodes sartina.—Primaries dark brown, crossed by three fine, dark grey, slightly curved lines, the inner and outer lines with black points on the veins; a small discal spot. Secondaries dark brownish gray, with a median and outer dark wavy shade. Underneath light brown, with a subterminal row of black points and slight discal spots. Expanse 29 mm.

Hab.—Jalapa, Mexico.

Aspilates macaria.—Head brown. Thorax and abdomen grey. Wings light grey, thinly flecked with black; outer line fine, brown, becoming black on the veins, followed by a narrow brown band partly shaded with black above and below veins; beyond this the outer margin on secondaries and on primaries from inner margin to vein 5 are brown, with a subterminal grey dentate line. Both wings crossed by a fine reddish brown median line, and a similar basal line on primaries. Underneath the wings are grey, suffused with brown and thickly flecked with black scales; an outer punctiform line and subterminal brownish shade. Expanse 31 mm.

Hab.—Castro, Parana.

Aspilates aluma.—Wings greyish white. Primaries somewhat speckled with light brown, chiefly along costa and outer margin, and forming a shade from inner margin at a third from base to near apex. A minute discal spot. Secondaries whitish, with the inner and outer margin flecked with light brown scales. Underneath the wings are thickly speckled with brownish scales. Expanse 25 mm.

Hab.—Castro, Parana.

Cataspalates quadrilinea.—Head and collar reddish brown, body buff. Primaries pale buff, flecked and crossed by four light brown lines, equidistant, slightly oblique; the median line somewhat curved; the outer line followed from vein 2 to costa by a narrow greyish line; a fine subterminal brown line. Secondaries pale buff, the costal margin broadly whitish, with three light brown lines not reaching the costa. Underneath more thickly flecked, with traces of the lines. Expanse 31 mm.

Hab.—Orizaba, Mexico.

PORONA gen. nov.

Antennæ pectinated in ♂, simple in ♀; palpi short, hardly extending beyond frons. Tibia long, smooth. Primaries broad, the apex slightly prolonged, acute; the outer margin rounded. Veins 7–10 stalked. Secondaries broad, outer margin rounded. Veins 3 and 4 and 6 and 7 apart; vein 8 diverging from near base.

Porana dissimilis.—♂. Wings yellow, slightly flecked with brown. A dark dentate line from near apex of primaries to inner margin of secondaries; beyond this line the wings are violaceous brown; a black point in the cells, and a wavy median line above inner margin on primaries.

The ♀ has space within the line buff, thickly flecked with brown. Underneath the wings are thickly flecked and similar in both sexes. Expanse 28 mm.

Hab.—Castro, Parana.

Pyrinia bertularia.—Light violaceous brown; some darker shades along costa, and a dark line deeply angled just below apex and continuing to middle of inner margin on secondaries; some dark terminal spots above inner angle on primaries. Underneath reddish ochreous, with darker striæ and the outer line not reaching apex. The primaries are rather long and narrow, the apex obtuse and the outer margin oblique. Expanse 23 mm.

Hab.—Castro, Parana.

Pyrinia aroaria.—♀. Apex of primaries slightly falcate. Wings brown, with darker flecks. Primaries with two dark brown lines, the inner line angled below costa, then straight to inner margin; the outer line angled below costa near apex, then oblique to middle of inner margin on secondaries. Underneath ochreous, with thick reddish striæ and the lines as above, but not reaching the costa of primaries. Expanse 18 mm.

Hab.—Aroa, Venezuela.

Pyrinia pescoria.—♀. Light brown, with some reddish and black striæ. Primaries with two transverse reddish lines at one-third and two-thirds from base; a subterminal row of small dark grey spots. Secondaries with a median red line and some red shadings about apex. Underneath similar. Expanse 21 mm.

Hab.—Petropolis, Brazil.

Pyrinia sanitaria.—Reddish brown; primaries with the outer margin tinged with lilacine; costa finely white, streaked with black; median and outer lines wavy, dark reddish brown; the outer line from costa near apex and parallel with outer margin. Secondaries with only a single line. Underneath dull ochreous, with red and violaceous striæ; the outer margins reddish; the lines as above. Expanse 25 mm.

Hab.—Jalapa, Mexico. Allied to *Pyrinia grata* Walker.

Pyrinia discata.—Head and thorax violaceous brown, abdomen greyish. Primaries olivaceous grey; a brown streak from the base through the cell to near apex; this streak is connected to costa by an oblique brown shade at three-fourths from base. Some blackish striæ at base and along costal margin; a large white spot in the cell; a subterminal greyish line, heavily shaded with white towards apex; a terminal blackish shade, fringe brown. Secondaries with costal half yellowish, otherwise brownish, with a few black striæ; a broad median brown line. Underneath yellow, primaries shaded with brown, chiefly beyond cell; a large white discal spot in cell, and a smaller one below it; a white subapical broken

line; secondaries with a reddish brown median line and some similar striæ and spots at angles. Expanse 20 mm.

Hab.—Castro, Parana.

Microgonia castraria.—Olive grey, the wings shaded with olive brown and finely speckled with black. The basal half of costa streaked with white; the inner line irregular, brownish, shaded with white; the discal point black, circled with lilacine; the outer line lunular brown, somewhat shaded with reddish on the inner margin, and at costa outwardly shaded with white and followed by a large blackish costal spot; a faint subterminal dentate line. The secondaries are darker grey, except on costa, and the outer line is lunular dark grey, with some yellow spots on veins. Underneath the wings are olive grey, with a few black specks; the outer line distinct reddish brown. Expanse 56 mm.

Hab.—Castro, Parana.

Microgonia incata.—Fawn color, the wings slightly irrorated with black; an indistinct, narrow median shade, reddish brown; the inner and outer lines irregular, wavy, interrupted, dark grey; the outer line shaded with reddish brown about inner margin and at costa, but not forming a distinct costal blotch; the outer line is spotted with whitish on veins, especially on secondaries; an indistinct wavy subterminal line. Underneath darker, the median and outer shade more distinct. Expanse 50 mm.

Hab.—Peru.

Microgonia bertha.—Brownish grey, darkest in the median space, and with a few black specks; the inner line indistinct, reddish brown, with minute yellowish specks on veins; the outer line lunular, fine, reddish brown, followed by pale spots on veins; some black subterminal points; discal point black, circled with greyish; a white subcostal spot near apex connected with costa by some greyish lines; on the secondaries the subterminal points are whitish. Expanse 45 mm.

Hab.—Castro, Parana.

Microgonia rotara.—Primaries dark reddish brown; the outer line fawn color, followed by a dark grey shade, leaving, however, the outer margin reddish brown; the costal spot greyish, edged with whitish scales; an inner wavy shade very indistinct. Secondaries dark brownish grey, the transverse line faint, fawn color, inwardly shaded with black. Underneath the wings are dark grey, speckled with black, the lines faint, darker, and spotted on veins on secondaries; some subterminal reddish brown shades. Expanse 63 mm.

Hab.—Songo, Bolivia.

Microgonia umbrosa.—Above dark greyish brown, slightly streaked with black, and with a general violaceous tinge; the basal and median transverse shades reddish brown; the outer line distinct, sometimes geminate; the costal spot glaucous, with some greyish scales; some terminal darker shadings, especially towards anal angle of secondaries, limited by an irregular dentate subterminal line; a large subcostal black patch near apex of secondaries. Underneath light brown, spotted with black; a faint outer line with black spots on the veins. Expanse 70 mm.

Hab.—Rio Janeiro; Castro, Parana. Allied to *Microgonia pectinata* Gn.

Acrosemia tigrata.—Allied to *A. vulpecularia*, but the yellow space is more restricted, paler, with thicker darker red mottlings; the inner line is angled below costa, and the outer line is distinct and wavy, as in *A. undilinea* Warr. and *A. ochrolaria* Schaus. The costal spot is whitish, and does not reach the apex. Expanse 31 mm.

Hab.—Jalapa, Mexico.

Acrosemia molpina.—Light brown, the lines wavy; the basal line inwardly shaded with grey; the outer line outwardly shaded with white; the costal spot white, not reaching apex; a black discal point on primaries; in some specimens the white shading to lines is absent. Underneath the wings are light fawn color, speckled with black. Expanse 34 mm.

Hab.—Jalapa, Orizaba, Mexico.

Acrosemia naranja.—Wings orange color; a black point in the cells; primaries with costal spot large, grey, reaching apex; a broad inner transverse light olive green shade, not reaching costa; an irregular outer row of greyish points on veins, broadly surrounded by light olive green, especially at inner margin; a subterminal olive green angular line. Secondaries with an outer and subterminal transverse olive green shade, partly spotted with grey on veins. Expanse 36 mm.

Hab.—Orizaba, Mexico.

Phyllodonta druciata.—Head fawn color. Thorax and abdomen lilacine. Wings lilacine. Primaries thinly speckled with black; inner line marked by black scales on costa and inner margin; discal point black, followed on costa by an oblique brownish shade; outer line fine, angular, most distinct towards inner margin where it is more broadly white, followed by a greenish buff shade; some dark grey lines at inner angle. Secondaries with a fine black outer line, inwardly shaded with light reddish brown near the inner margin and heavily shaded with blackish grey about the anal angle. Underneath the wings are reddish grey, thickly mottled with brown. On primaries a brown median line; outer line brown, distinct, nearly straight, angled at costa and above submedian vein; the outer margin below vein 3 and inner margin whitish. Secondaries with median brown shade and black discal point; outer line irregular. Expanse 35 mm.

Hab.—Jalapa, Mexico; Aroa, Venezuela.

Phyllodonta indeterminata.

I give this name to the species figured as *canniata* Gn. by Mr. Druce in the Biol. Cent. Amer. Tab., 43, figs. 1 and 2. In my opinion Snellen figures the true *Canniata* Gn., and the name *Snelleni* must sink.

Entomopepla vorda.—Wings brownish gray, with fine transverse darker striæ. Primaries: the median space paler limited by the two lines; the inner line is angled below costa and then slightly oblique to inner margin; the outer line is slightly curved inwardly; both lines dark brown and distinct. The secondaries have only a dark median transverse brown line. Discal points very minute, black. Expanse 35 mm.

Hab.—Aroa, Venezuela. This species has the margin straight above and below angles in outer margin and not crenulate as in *E. annulipes* Feld.

Entomopepla grisea.—Olivaceous grey, with a few dark brown specks. Primaries: the costal margin finely buff; the fringe dark brown; some clusters of brown scales on and above inner margin near the angle. Secondaries: a basal dark line; the outer two-thirds shaded with brown; traces of a median and outer wavy grey line, partly shaded with black about the anal angle. Underneath with an indistinct brownish subterminal shade. Expanse 33 mm.

Hab.— Peru.

Rhomboptila intermedia.—Pale fawn color, speckled with black. Primaries: lines fine, dark brown, inwardly shaded with gray, nearly straight; a brownish median shade from costa to outer line on inner margin; outer line fine, indistinct, grey, partly shaded inwardly with brown, and followed by a cluster of dark scales between veins 3 and 4; a few subterminal dark points; fringe dark brown; discal point minute, black. Secondaries with outer line distinct, olivaceous, slightly rounded below costa at apex, then straight to anal angle; a fine greyish line marked on veins by black points from costa beyond middle to centre of outer line and thence to inner margin at two-thirds from base; discal point more distinct than on primaries. Expanse 31 mm.

Hab.—Peru.

Polla voraria.—Light brown; an outer row of white points on the veins, starting from a whitish costal blotch on the primaries near the apex. Underneath shaded with whitish within the line, which is distinct and white; some subterminal whitish shades. Expanse 30 mm.

Hab.—Sao Paulo, S. E. Brazil. Allied to *Polla pallidiplaga* Warr.

Acrotomia trilva.—Light brown, with numerous transverse black striæ. Primaries: inner line dark brown, angled below costa and then inwardly oblique to inner margin, followed by a finer parallel medial line; outer line nearly straight, followed on upper third by a light reddish brown shade, which is again outwardly shaded with blackish. Secondaries with a basal and inner transverse line. Underneath without markings. Expanse 25 mm.

Hab.—Orizaba, Mexico.

Acrotomodes hielaria.—♀. Brown, with small scattered patches of grey scales; lines darker, reddish brown, wavy, parallel, slightly wider apart on secondaries than on primaries; the outer line on primaries partly crossing a

greyish band, which extends to apex. Underneath dull lilacine brown, with dark striæ; on primaries a black outer line; the outer margin reddish brown. Expanse 38 mm.

Hab.—Castro, Parana.

Acrotomodes bornmata.—Dark violaceous brown, with a few scattered grey flecks; the lines darker, fine, wavy, parallel; on primaries a cluster of greenish grey scales at apex and above inner angle. Underneath dark reddish brown, with some blackish striæ. Expanse 25 mm.

Hab.—Aroa, Venezuela.

Apicia maldama.—Purplish fawn color, speckled with black; the costa and inner margin of primaries, also base of secondaries slightly yellowish. A minute black point in the cells; primaries with inner and outer transverse darker shades, rather indistinct; the outer line starting from a dark costal spot near the apex. Secondaries with only the outer line. Expanse 33 mm.

Hab.—Castro, Parana.

Apicia calcaria.—Olivaceous grey, thinly speckled with black. Primaries: inner line olivaceous brown inwardly shaded with whitish, angled as costa, where it is brown, and with dark points on median and submedian veins; a broad dark median shade on costa above black discal point, continuing as a fine, olive-green line to inner margin contiguous to the outer line; the outer line is dark brown, lunular, more punctiform on veins, outwardly shaded with pinkish white, and inwardly shaded with olive-green; an oblique dark line near apex from costa to outer line; a large dark brown patch above inner angle. Secondaries olivaceous gray; the discal black point rather large; the outer lines as on primaries. Underneath yellowish, with dark grey striæ; lines dark grey, indistinct. Expanse 27 mm.

Hab.—Peru.

Hesperomiza dusa.—♂. Light greyish buff; the median space on primaries tinged with reddish brown; a faint pale reddish inner line; a black point in the cell; the outer line distinct, reddish brown, angled at apex, then straight to inner margin of secondaries, but interrupted on costal margin of these wings; the wings are somewhat speckled with both brown and reddish.

♀.—Brown, darkest on outer margins; the costal margin of secondaries and median space of primaries tinged with grey; the outer line is black, divided by a fine grey line. Underneath duller, without markings. Expanse 36 mm.

Hab.—Sao Paulo, S. E. Brazil.

Sicya vigasia.—Wings grey: the primaries and outer margin of secondaries finely speckled with brown; the primaries crossed from costa near apex to inner margin beyond centre by a yellow band inwardly shaded with brown. Underneath the costal margin of primaries yellowish, speckled with brown; the transverse line less distinct; the secondaries yellowish, except the costal, inner margin and a shade centrally from base to outer margin, which are greyish, both colors speckled with brown, and a fine outer transverse line. Expanse 34 mm.

Hab.—Las Vigas, Mexico.

Epiplatymetra allidaria.—♂. Wings brown, with a few black specks and black discal points; a fine brown line outwardly shaded with lilacine from costa near apex of primaries, where it is angled to inner margin of secondaries above anal angle. On primaries an inner, irregular and indistinct transverse shade. Underneath the line is punctiform.

The ♀ is paler, with the wings more thickly covered with dark striæ. Expanse 37 mm.

Hab.—Jalapa, Mexico. The secondaries are not quite so strongly angled as in other species of the genus. In one ♂ there are two black spots beyond outer line on primaries.

Metanema margica.—♀. Reddish brown. Primaries: a small black discal point; the inner line pinkish, straight from costa to inner margin; outer line darker than ground color, and outwardly shaded with pinkish, slightly oblique from costa at four-fifths to inner margin. Secondaries with a single transverse line. On both wings a cluster of dark grey scales between veins three and four. In another specimen these clusters of scales are absent. Expanse 40 mm.

Hab.—Orizaba, Mexico.

Metanema santella.—Body fawn color, with darker irrorations. Wings pale buff, thickly irrorated with brownish grey scales. Primaries crossed by two dark bands, the inner angled below costa, then straight, the outer slightly curved at two-thirds from the base at both costal and inner margins. Secondaries with a single median line. Underneath without marking. Expanse 32 mm.

Hab.—Jalapa, Mexico.

Digonodes matama.—♀. Very dark brown, the outer margin slightly tinged with reddish. Primaries: a velvety black point in the cell; the inner line blackish, indistinct, slightly curved; the outer line black, wavy, slightly curved inwardly below vein 4. Secondaries blackish brown; a black discal spot and fine outer line. Expanse 44 mm.

Hab.—Jalapa, Mexico.

Digonodes ragona.—Wings light brown, finely speckled with black. Primaries: a large black spot in the cell; inner line fine, black, wavy, rather indistinct; outer line fine, black, outwardly shaded with white, forming two inward curves, being produced towards outer margin at vein 4: terminal black points between the veins Secondaries clouded with black; an outer line, indistinct; the outer margin paler. Underneath the outer line on secondaries is more distinct and there is a black discal spot. Expanse 40 mm.

Hab.—Coatepec, Jalapa, Mexico.

Spododes nubilata.—Light fawn color, thinly speckled with reddish brown; a minute, black point in the cells; a median reddish brown transverse shade, heavier and broader on primaries; an outer row of black points on the veins, connected by a greyish shade; much broader on primaries than on second-

aries. Underneath paler, with the marking very similar, but no median shade. Expanse 28 mm.

Hab.—Chanchamayo, Peru.

Spododes fiamina.—Wings light brownish golden; the lines fine, indistinct, blackish, followed by small whitish spots on the veins; the inner line slightly curved; the outer line wavy, irregular, approaching close to outer margin between veins 3 and 4 on both wings; a faint discal spot in cells. No inner line on secondaries. Expanse 28 mm.

Hab.—Colombia.

Certima chiqua.—Brown, thinly and finely speckled with darker brown; a minute black discal point in the cells; primaries with the lines dark brown; the inner line inwardly shaded with lilacine and straight from costa to inner margin; the outer line outwardly shaded with lilacine, straight. Secondaries with only the outer line. Underneath grey; a faint trace of the outer line. Expanse 31 mm.

Hab.—Coatepec, Mexico.

Heterolocha tomisa.—Wings rounded on primaries, somewhat crenulate on secondaries, yellowish buff, with darker striæ; lines fine, dark brown; the inner line inwardly oblique from subcostal vein; the outer line forming two outward curves from costa to vein 3, then a deep curve inwardly to margin; a brown point in the cells. Secondaries with the outer line straight from costa to between veins 4 and 6, then sinuous to inner margin. Underneath pale buff; the secondaries with an outer and subterminal fine line, parallel to each other. Expanse 27 mm.

Hab.—Guadalajara, Mexico.

Heterolocha apricoides.—♂. Antennæ simple, wings slightly angled at vein 4. General appearance of *H. apricaria* H. S. Wings light yellow, covered with darker striæ; brown points in the cells; the lines reddish, with whitish streaks on veins; primaries with inner line straight, upright, not reaching costa; outer line excurved and angled below costa, then obliquely sinuous to inner margin. On secondaries the outer line is evenly curved. Underneath the same but duller. Expanse 36 mm.

Hab.—Bolivia.

Urepione valloma.

This species is like the brownish forms of *U. quadrilinearia* Walker, but the inner line is replaced by a median line, which is slightly oblique outwardly instead of being curved inwardly. Described from several specimens received from Staudinger without locality. *U. quadrilinearia* Walker has as synonym *Semiothisa contorta* T. M.

Nematocampa evanidaria.—Pale yellow, with some slightly darker striæ; the lines fine, blackish. Primaries: the inner lines outwardly oblique; a dark grey lunular mark in cell; the outer line wavy, outwardly shaded with grey, especially about inner angle. Secondaries with a mark in the cell, and the outer line very indistinct. Underneath pale yellow, with the discal marks distinct and the outer line heavily shaded with brown; a brown shade at inner angle. Secondaries with a dark spot at apex. Expanse 22 mm.

Hab.—Peru.

Melinodes conspicua.—♂. Pale buff, with some reddish scales and a few brown striæ. Lines as in *M. detersaria* H. S.; an irregular subterminal black line most heavily marked above inner margin; a dark patch on outer margin between veins 3 and 4. Secondaries with the shadings about anal angle as in *detersaria*.

♀.—Pale buff; the costal margin of primaries brown; the outer margins dark brown, except a subapical space on both wings, and a small spot above inner angle on primaries, which are pale buff, with brown striæ; the inner line on primaries is also broadly brown. Expanse 26 mm.

Hab.—Sao Paulo, S. E. Brazil.

Periclina daldana.—Bright yellow, with red striæ and flecks; the lines dark brown; the inner line inwardly shaded with light brown; the outer line outwardly shaded with light brown, having white streaks on the veins; basal third of costa brown; the inner line outwardly oblique; the outer line from near apex, the dark portion only commencing at vein 7, and continuing to inner margin of secondaries; a black discal point on primaries. Underneath pale yellow, with an outer row of red points on veins. Expanse 30 mm.

Hab.—Orizaba, Mexico. Allied to *P. cucurbitata* Gn.

Leucula petrovna.—Body grey. Wings smoky grey, slightly diaphanous; a large dark spot at the end of the cells, and a fine, dark grey terminal line on both wings. Expanse 25 mm.

Hab.—Petropolis, Brazil. Resembling the species of *Parrhesia*, but vein 5 on primaries is from centre of discocellular.

Leucomicra fuscaria.—Body whitish grey. Wings browish grey; the lines blackish; primaries with the inner line straight; the outer line dentate; some white spots on costa. Secondaries with an outer dentate line and the base of the wings lighter grey in the ♀; white in the ♂. Underneath grey, thickly mottled with reddish brown and flecked with white; the line on secondaries very heavy, black; black spots in cells. Expanse 20 mm.

Hab.—Castro, Parana. Very close to *L. leucospilaria* Walker.

Callopsiodes cautama.—Head and thorax olivaceous grey. Wings lilacine, thinly speckled with black. Primaries: inner line slightly curved outwardly to above submedian, then curved inwardly, dark brown, outwardly shaded with light green scales; a black point in the cell, followed by a black patch, connected to costal margin by an oblique brown shade; outer line angled

below costa, then lunular to inner margin, very fine, dark brown, inwardly shaded with green, above the angle of outer line a dark brown patch on costa; outer margin shaded with dark brown. Secondaries with a brown outer lunular line. Underneath grey, speckled thinly with black; discal points and a punctiform outer line. Expanse 50 mm.

Hab.—Jalapa, Mexico. Quite distinct from *C. mexicanaria* Walker.

Cannagara bogada.—Brownish grey, with a few black specks, and thickly striated with reddish brown and darker grey. Primaries with two fine reddish brown lines; the inner line slightly curved; the outer line straight, starting from a dark grey costal spot close to apex. Secondaries with a straight outer line. A conspicuous black point in the cells. Underneath the line on secondaries is lunular. Expanse 39 mm.

Hab.—Castro, Parana.

Therina punctillaria.—♀. Wings light grey, finely speckled with black. Primaries with a minute discal point and two indistinct dark lines; the inner line slightly curved; the outer line slightly oblique; both finely lunular, with the convex side towards outer margin. Expanse 26 mm.

A ♂ from Puebla is somewhat larger. 31 mm.

Hab.—Oaxaca, Mexico.

Therina atomaria.—♀. Base of antennæ, base and tips of patagiæ orange. Body otherwise dark grey. Wings pale buff, thickly mottled with heavy grey striæ and blotches, leaving only median space and apex of primaries paler. There is an outer grey line on primaries angled at vein 5, and then lunular to inner margin. Minute black points in the cells. Underneath similar but paler. Expanse 38 mm.

Hab.—Costa Rica. This may be a very dark form of *T. melia* Druce.

Therina templadaria.—Head and collar orange. Thorax grey; abdomen yellowish, speckled with black and grey. Wings greyish brown, finely speckled with black. Lines yellow. Primaries: inner line angled on costa, then wavy to inner margin; outer line slightly sinuous; a small black discal spot. Secondaries with outer line straight. Expanse 45 mm.

Hab.—Jalapa, Mexico.

Endropia guatama.—♂. Primaries yellow, with a few dark striæ; basal and outer spaces violaceous brown, with darker striæ; the lines fine, dark violaceous brown; the inner line outwardly curved above median and below submedian veins: the outer line sinuous from costa near apex to inner margin at three-fourths from base; a small mark in cell. Secondaries similar: has the outer line more like a broad irregular shade, darker than the rest of the outer margin. Expanse 32 mm.

Hab.—Guadalajara, Mexico.

Endropia matteoria.—Buff, with transverse brown striæ, forming a conspicuous patch on outer margin of primaries below vein 4 and about anal angle of secondaries. Primaries: inner line angled at costa, then slightly oblique outwardly, fine, brown; outer line dark brown, slightly oblique inwardly; a dark patch on inner margin between outer line and subterminal line, which is deeply lunular, this patch is sometimes absent and varies from light brown to black; a black point in cell. Secondaries without the inner line. Underneath less speckled, and only the subterminal line conspicuous. Expanse 28–38 mm.

The ♂ is more uniform brown, with some subterminal yellowish patches. Expanse 35 mm.

Hab.—Jalapa, Mexico.

Selenia albilinearia.—Shape of wings as in *S. nubdalsa* Druce. ♂.—Wings brown; a darker median shade. Primaries with inner line darker, nearly straight; outer line fine, white, followed by a broad greyish shade, and inwardly edged with darker brown, this line curved and angled below costa, then slightly sinuous to inner margin near angle; a minute point in the cells. Secondaries without the inner line. Underneath greyish brown, with an indistinct wavy outer line. Expanse 33 mm.

♀.—Brownish buff, with the outer line black, followed by a dark grey shade; the inner line dark grey. Underneath pale, otherwise similar to ♂. Expanse 31–35 mm.

Hab.—Jalapa, Orizaba, Las Vigas, Amecameca, Mexico.

Synomos ? narangia.—Primaries green brown, speckled with black; the fringe reddish; a large creamy white spot in the cell, somewhat speckled with grey and contiguous to a minute white spot surrounded by black. From vein 6 to costa before apex a broad creamy white wavy mark: this is really the commencement of the outer line, which is very fine, greyish and indistinct. Secondaries orange; the outer margin suffused with greyish brown; the costal and inner margins paler; a large black discal spot. Underneath light brown; black discal spots much larger on secondaries, and a fine brownish outer line; the discal spot on primaries followed by yellowish. Expanse 43 mm.

Hab.—Jalapa, Mexico.

Azelina ligera.—♀. Brown. Primaries with inner line thick, black, oblique from costa to middle of cell, then forming three curves to inner margin; outer line fine, white, inwardly shaded with darker brown, slightly sinuous and followed by some black shading between veins 2 and 5; a white crescent at end of cell; a terminal row of black points. Secondaries paler except at anal angle; a transverse blackish line, outwardly shaded with buff near inner margin, the spot of underside showing through. Underneath slightly paler; the primaries showing the markings of upper surface. The secondaries specked with black; a large black discal spot, and a wavy black outer line. Expanse 27 mm.

Hab.—Castro, Parana.

Azelina vecina.—Dark brownish grey; the outer margin lighter; the lines shaded with velvety black; the inner line outwardly oblique from costa to median

vein, then inwardly oblique and wavy to inner margin; the outer line wavy and outwardly curved between median and submedian veins; a small white crescent in cell; some terminal white dots, and a terminal black dot between veins 2 and 3. Secondaries brownish grey, with an outer transverse line rounded at anal angle, this line dark, outwardly shaded with light buff: a terminal row of black dots. Underneath buff, thickly mottled with grey striæ; an indistinct outer wavy line. Secondaries with a black discal spot divided by a pale line. Expanse 22 mm.

Hab.—Jalapa, Mexico. Closely allied to *A. melissa* Druce, but of a different color and larger.

Azelina lessema.—Margins of wings dentate. Primaries with median space brown; the base and outer margin greyish brown; the inner line heavy, black, oblique from costa to median vein, then dentate to inner margin; the outer line fine, black, slightly wavy and outwardly curved between median and submedian veins; a white crescent in cell; a terminal row of white points. Secondaries brown, with the outer transverse line as in *A. vecina* Schaus. Underneath brown; primaries with a pale space on outer margin; the outer line fine, and terminal black points with white centres. Secondaries with black discal spot, and the outer line very dentate, black, outwardly shaded with white; the inner margin with black and grey striæ. Expanse 40 mm.

Hab.—Jalapa, Mexico.

Azelina corata.—Body brown; terminal segment of abdomen grey. Primaries greyish, shaded with light reddish brown; the median space brown, darkest below the cell; the inner line black, thick, oblique from costa, then fine, forming three curves to inner margin; the outer line fine, brown, straight from costa to vein 4, then slightly curved inward to below vein 2, then curved outwardly to submedian and forming a slighter curve below that vein; a reddish subterminal wavy line; some terminal black points; an oblique white spot in cell; some blackish scales beyond outer line between veins 2 and 4. Secondaries dark brown, with a pale transverse line and some terminal black points. Underneath brown; primaries with inner margin, space on outer margin and apex grey. Secondaries with a whitish dentate transverse line and a black and white discal spot. Expanse 43 mm.

Hab.—Jalapa, Mexico. Margins nearly straight.

Azelina jamaicensis.—Head and thorax black; abdomen brown. Primaries: base grey, with black striæ, and limited by the black inner line, which is oblique from costa to median vein, starting from this vein again at the same distance from base as the origin of the line on costa it is perpendicular to submedian, and then forms a deep outward curve to inner margin; the line is heavily shaded outwardly with black; the median space is dark brownish grey below the median vein, light reddish brown above it; a black transverse streak or geminate spot in cell; the outer line in light, heavily shaded inwardly with black, slightly sinuous, bulging somewhat below vein 2, and is also followed by some black shadings; the outer margin is greyish, thinly speckled with black; a reddish brown subterminal shade; some terminal black and white dots. Secondaries light brown, with a fine, dark outer line; the margins of wings are slightly den-

tate. Underneath the costal half of wings are brown; the inner half whitish, with some black flecks; an irregular dark outer line and terminal white dots. Expanse 41 mm.

Hab.—Jamaica.

Azelina curuma.—Violaceous or reddish brown. Primaries with the inner line forming an oblique dash from costa, of a dark velvety brown, then wavy to inner margin, of a greyish black; a white crescent at end of cell; the outer line paler, but broadly shaded inwardly with dark brown, straight from costa to vein 5, then inwardly curved to below vein 2, where it bulges slightly and is curved to inner margin; above vein 6 the apex is violaceous, below it the outer margin is blackish grey, with a light brown space between it and the outer line; some terminal white spots. Secondaries with some light brown shades about the anal angle; three black dots at anal margin and an indistinct outer line. Underneath the discal spots are white containing a black speck; the apex of primaries and costal margin of secondaries dark reddish brown, otherwise the wings are dull dark grey, with a fine outer line. Expanse 40 mm.

Hab.—Jalapa, Mexico. This species is somewhat like *A. jimenezaria* Dogn., but the margins of wings are less angular and the markings also differ.

Meticulodes algerna.—Head and collar olivaceous grey; thorax brown. Abdomen grey, with lateral reddish tufts. Primaries with costal margin broadly, and inner margin below median vein lilacine brown, with black striæ; from cell to outer margin and between veins 3 and 5 a whitish space; lines velvety brown, very irregular, the inner line angled in cell; the outer line only visible from inner margin to vein 3, followed by a broad brown shade; traces of a terminal dark line. Secondaries greyish, nearly white on costa; an inner margin streaked with black; fringe and anal angle reddish brown; a grey outer line, followed by a paler shade. Expanse 43 mm.

Hab.—Chanchamayo, Peru.

Cleora bianquita.—Head white. Thorax white, with some black marks. Primaries white; lines fine, velvety black; a black line at the base; the inner line forming three outward curves, partly geminate, with some greenish grey scales between; the median line forming three inward curves, followed by a greenish grey shade and black spot in cell, and also below 2, connecting it to the outer line; outer line lunular, interrupted, followed by a faint greenish grey shade; some subterminal geminate black marks; a terminal row of black points. Secondaries whitish, speckled with grey scales; a subterminal brownish line and some terminal black triangular spots. Expanse 36 mm.

Hab.—Las Vigas, Mexico.

Bryopteia colita.—Primaries grey, thinly speckled with black; the inner line broad, dark, angled below costa, then inwardly oblique, partly divided by a brownish line; a small black discal point, followed by a black median shade, curved at end of cell, then inwardly oblique, below vein 4 very thick and black; the outer line fine, black below costa, brownish below vein 4, followed by a paler

line, and then by some large black blotches between veins 4 and 6, and below vein 4 by a brownish line; a subterminal, angular, whitish line, outwardly shaded with black between veins 4 and 6; some terminal black points. Secondaries with a broad black median shade from inner margin to discal point; the outer line fine, black, followed by a grey line, and then broadly shaded with brown, which becomes black on inner margin; a subterminal angular white line and terminal black points. Underneath dull dark grey, with faint median shade; outer line and outer margin broadly darker. Expanse 27 mm.

Hab.—Castro, Parana.

Bryoptera subpallida.—Primaries white; some olivaceous brown shadings at base; inner line straight, broad, black, outwardly shaded with olivaceous brown; the median shade olivaceous brown, broad, especially on inner margin, where it is contiguous to outer line, which is fine, wavy, velvety, black; the outer line followed below costa by a broad olivaceous brown shade; a subterminal interrupted olivaceous brown line; terminal black points; fringe white, divided by an olivaceous line. Secondaries white; a broad black median shade from margin to discal point; outer line black, almost punctiform, followed by a black spot near inner margin; outer margin and fringe as on primaries. Underneath primaries light grey, with the outer margin darker, and traces of median and outer line. Secondaries white, with some olivaceous flecks; a dark median line. Expanse 27 mm.

Hab.—Castro, Parana. Allied to *B. leprosata* Gn.

Boarmia atilla.—Primaries dark grey, with some whitish spots on costa and veins; traces of a still darker inner and median shade, the latter crossing a large dark discal spot; the outer line fine, black, lunular, only noticeable below costa, where it is followed by a dark reddish brown shade; a subterminal white angular line, followed by dark brown and some whitish scales at apex; terminal line fine, black, enlarging to spots between the veins. Secondaries with the costal half lighter grey; a black discal spot; traces of an outer line, geminate on inner margin; the subterminal and terminal lines as on primaries. Underneath grey, darkest on outer margin of primaries; black discal spots and terminal black points between the veins; fringe long, margin crenulate. Expanse 36 mm.

Hab.—Bolivia.

Boarmia caumata.—Wings light brown, the base of secondaries paler; lines darker. Primaries: inner line wavy, perpendicular; median line broad, punctiform on veins; outer line punctiform, oblique from costa, then from below cell close to median line; subterminal line faint, angular, light brown; terminal line dark brown, thickened between the veins. Secondaries similar, without the inner line. Underneath pale fawn color; a dark shade below apex of primaries. Expanse 25 mm.

Hab.—Peru.

Boarmia amberia.—Body fawn color; on basal segment of abdomen a dark brown transverse line. Wings pale fawn color, very thinly speckled with dark brown; the lines fine, black; inner line interrupted, but heavily marked on

inner margin; the median line marked by a spot on costa, otherwise absent on primaries, but fine and indistinct on secondaries; outer line angular, sinuous, somewhat punctiform; the outer margin broadly shaded with brown, leaving a subterminal whitish lunular shade, and some dark spots about veins 5 and 6 on both wings; the terminal line black, spotted with black between the veins. Underneath fawn color, with only small discal points. Expanse 32 mm.

Hab.—Sao Paulo, S. E. Brazil.

Boarmia synchroma.—Wings broad, margins crenulate. Body brown; collar posteriorly darker; three transverse dark brown bands at base of abdomen. Wings brown; the basal line on primaries curved, very fine and indistinct; median line broad, slightly wavy, straight from costa to below median, then inwardly oblique to inner margin; outer line very indistinct, curved below costa, then very oblique to inner margin close to median line, where it is more conspicuous; a subterminal lunular dark line; a terminal black crenulate line. On secondaries the median line is followed by a dark brown shade; discal points small, black. Underneath pale yellowish brown, with faint traces of the lines. Expanse 34 mm.

Hab.—Jalapa, Mexico.

Boarmia grosica.—Wings white; costa of primaries and outer margins somewhat streaked with brown; lines fine, black, the inner line curving obliqely, punctiform on veins and corresponding to abdominal black segment; median line very broken, most noticeable from cell to inner margin of secondaries; outer line rather punctiform, slightly oblique, inwardly dentate once below vein 2, somewhat sinuous on secondaries, followed by some brownish blotches above vein 3 on primaries, and by an indistinct brownish line on secondaries; the subterminal shade interrupted, partly dentate; a terminal row of black spots between the veins. Underneath whitish, the outer margin of primaries broadly black. Expanse 26 mm.

Hab.—Castro, Parana, Chanchamayo, Peru.

Tephrosia sadrina.—Body greyish fawn color; the abdomen dorsally spotted with black. Wings fawn color, thinly irrorated with black and pale brown scales. Primaries: a faint wavy, black, inner line, partly geminate; the median line only visible on costa and inner margin; a black discal point; an outer row of black points on veins, followed on inner margin by two superposed larger black spots; subterminal black spots on inner margin and between veins 4–7, followed by similar shades; a terminal row of black points between the veins. Secondaries: a broad dark basal band; a fine black median line, followed by a brownish shade; a subterminal row of black spots; a terminal black line interrupted by the veins. Expanse 33 mm.

Hab.—Orizaba, Mexico. Allied to *T. argillaria* Gw.

Tephrosia giatoma.—Wings light grey, very thickly speckled with brown; the inner line broad, dark grey; the median line fine, distinct, slightly sinuous; an almost imperceptable outer line from costa near apex; some small terminal dark points. Underneath whitish grey, more thinly speckled with brown. Expanse 25 mm.

Hab.—Jalapa, Mexico.

Tephrosia humidaria.— ♂. Primaries very dark brown; median space slightly paler, also some blotches on costa; the inner line wavy, indistinct; the outer line very fine, black, inwardly curved below vein 2; a subterminal lighter brown lunular shade and a terminal black line. Secondaries greyish brown, palest at base; a fine outer line; a heavier terminal line and an indistint subterminal line; a black point on inner margin above the outer line. Expanse 30 mm.

The ♀ is lighter, the inner line black, geminate; some dark median shades; a dark subterminal band; a greyish shade at apex and about center of outer margin. Expanse 36 mm.

Hab.—Orizaba, Mexico.

Tephrosia ? centosa.—Margins rounded. Pale buff, finely and sparsely speckled with black; black discal points; the lines fine, darker buff on primaries, grey on secondaries; the inner and median lines fine, inwardly oblique and parallel; the outer line geminate; a subterminal row of dark grey points, followed by a marginal grey shade between veins 6 and 7; on primaries terminal black points between the veins; on secondaries the lines do not reach the costal margin. Underneath similar, the lines less distinct. Expanse 35 mm.

Hab.—Castro, Parana.

Gnophus crœsaria.—Thorax ochreous. Abdomen grey. Wings light grey, irrorated with black scales. Veins orange, except at base of secondaries, and where crossed by black lines. Primaries: the base mottled with orange; the inner line fine, black, interrupted, and inwardly oblique from median vein; the median line outwardly curved above and below median vein; the outer line punctiform, black, outwardly curved and contiguous to median line on inner margin, and followed by an orange shade; a subterminal crenulate white line; terminal black spots between the veins. Secondaries: a median straight black line; the other lines as on primaries. Black points in cells. Underneath luteous. Expanse 43 mm.

Hab.—Chiriqui.

Stenalcidia cindica var. **occidentalis.**

Differs from typical race in having a brown tint instead of grey, otherwise the markings are similar.

Hab.—Peru.

Stenalcidia occulta.—Body and wings grey, thickly speckled with brown; no inner line; an indistinct median shade; outer line represented by black points on the veins, followed by a faint brown shade; a subterminal row of brown points, outwardly shaded with grey; terminal dark streaks on and between the veins. Underneath dark grey, with a terminal brown line. Expanse 32 mm.

Hab.—Sao Paulo, S. E. Brazil.

Stenalcidia arthura.—Wings light grey, speckled with pale brown; lines fine, black; the inner line interrupted in cell and at submedian vein; the

median line very faint; the outer line punctiform below costa of primaries, then fine, sinuous, followed by a brownish shade; the subterminal shade dentate, light grey; terminal line black. Underneath primaries brown; secondaries whitish grey; the base and costal margin brown; the terminal line black; conspicuous black points on fringe. Expanse 30 mm.

Hab.—Sao Paulo, S. E. Brazil. Very close to *S. dimidiavia* Gn., but much larger and without the dark shades and marks on outer margin.

Physocleora capruna.—♂. Body grey; vertex yellow; collar and basal segment of abdomen orange. Wings light grey, with the markings darker grey; discal spots large; inner and median lines indistinct; outer line lunular, geminate; a row of large subterminal and terminal spots; fringe whitish, spotted with grey. Underneath dark grey. Expanse 20 mm.

Hab.—Rio Janeiro.

Physocleora martena.—Wings dark grey, speckled with black; the lines very fine, almost invisible, black, most heavily marked on costa of primaries, where they are angled, and then oblique to inner margin of secondaries; the outer line is punctiform and followed by some indistinct brownish shades; a subterminal dentate grey line. Underneath dark grey, without markings, except minute discal spots. Expanse 23 mm.

Hab.—Castro, Parana.

Physocleora dardusa.—Body white, banded with dark brown. Wings white, speckled with brown, especially on costa of primaries and the outer margin; the lines fine, black, distinct; the inner line from costa at a third from base, curved in cell, and then oblique to base on secondaries; median line angled at costa, much interrupted on primaries, more distinct on secondaries; outer line inwardly curved below costa and below vein 2, followed by a lighter brown shade and ochreous streaks on veins; a broad subterminal brown band, divided by a white angular line; terminal black line and intervenal spots. Underneath: primaries grey; the outer margin broadly darker; secondaries white, the apex grey. Expanse 19 mm.

Hab.—Sao Paulo, S. E. Brazil.

Cidariophanes guaparia.—Head and body dark green, mottled with brown. Primaries light violaceous brown, mottled with dark brown; costa bright green, except at base and near apex; inner line dark, wavy, broadly shaded inwardly with green; outer line shaded outwardly with green; some white subterminal spots at apex and above inner margin, where they enclose a black spot; terminal triangular black spots edged with white; fringe streaked at veins with green, otherwise brown, darkest at base. Secondaries light reddish brown, somewhat speckled with brown; traces of a dentate outer line and subterminal dark shade above anal angle. Expanse 27 mm.

Hab.—Castro, Parana. Allied to *C. ischnopterata* Warr., but smaller and with dark secondaries.

Cidariophanes ? duarina.—Wings produced at vein 4. Head and thorax greyish buff; abdomen buff, speckled with black. Primaries greyish white, almost entirely covered with long brown striæ, except on outer margins, which remain broadly white, with greyish striæ; lines fine, black; inner line nearly straight, inwardly shaded on costa with white; outer line angled below costa, then straight to inner margin; above angle there is a large white spot on the costa. Secondaries white, streaked with brown and grey on outer margin; an outer dark line more distinct in the ♀. Underneath whitish, a black discal point on secondaries, and subterminal brown shadings. Expanse 40 mm.

Hab.—Castro, Parana.

Cidariophanes incaria.—Body dark olive green. Primaries green at base, mottled with brown; inner line black, wavy, oblique on costa, then straight to inner margin; median space brown, except costa, which is green, streaked with brown; outer line black, oblique from costa to vein 4, then inwardly wavy to inner margin near the inner line; outer margin broadly green, with a broad light reddish brown subterminal shade, except between veins 4 and 6; a dark terminal spot above vein 4, and a dark patch on inner margin near angle. Secondaries brown; an outer dentate transverse line, and a dark subterminal shade at anal angle, outwardly edged with pale buff; an interrupted terminal black line. Expanse 34 mm.

Hab.—Peru. This species and *C. psittacaria* Schaus have the antennæ pectinated.

Cidariophanes psittacaria.—Head and thorax green, abdomen brown. Primaries green, with some brown striæ; the inner line black, wavy, inwardly edged with white and then with green and white mottlings; the outer line black, wavy, oblique from costa to vein 4, then inwardly oblique to inner margin near the inner line; the median space below the black discal spot is brown; the outer line is outwardly edged with white; the subterminal line is nearly straight, white, slightly interrupted; there are numerous white scales at apex and between veins 2 and 4 to outer margin and between veins 4 and 6 up to the subterminal line. Secondaries white; a few black specks on outer margin; a subterminal dark shade at anal angle, and a black spot above it on inner margin. Underneath white, mottled with green and speckled with black; a black dentate outer line and black discal spots. Expanse 38 mm.

Hab.—Peru.

Spiloeraspida aroaria.—Wings brown, with a few black specks and minute discal spots; a very faint outer line slightly darker than ground color; a subterminal dark grey broken shade, followed by some dark grey spots; dark spots at tips of veins. Secondaries with a subterminal row of whitish spots, heavily shaded with grey near inner margin, where it is followed by a few black spots. Underneath light brown; the outer margin darker. Expanse 22 mm.

Hab.—Aroa, Venezuela.

Spiloeraspida umbrilinea.—♀. Light brown; minute black discal spots. Primaries: a dark broad outer shade, angled at costa, produced at vein 4, then inwardly curved to inner margin; black points at ends of veins; secondaries

with an indistinct dark outer shade, and some dark brown about the inner margin. Underneath greyish, with a subapical dark shade on primaries. Expanse 26 mm.

Hab.—Orizaba, Mexico.

Simena umbrifera.—Head, collar anteriorly and thorax underneath orange. Thorax above and abdomen greyish black. Primaries black; a broad inner, median and broad subterminal dentate line light olivaceous brown. Secondaries with the costal half to near apex white; the apex and outer half greyish black, with a subterminal broad white line. Underneath dark glossy grey; the disk of secondaries somewhat whitish. Expanse 40 mm.

Hab.—Orizaba, Mexico.

Panthera pumaria.—Primaries yellowish green; costa yellow; a dark inner band; darker terminal shadings, and some subterminal dark streaks below costa; an oblique dark discal spot. Secondaries bright yellow; the inner margin greenish; an indistinct discal spot; a subterminal dark spot on costa, another between 4 and 6, and one near anal angle; some dark terminal scales between veins 2 and 3. Underneath yellow, with black discal spots; apex of primaries and a subcostal patch black. Secondaries with an apical and anal dark spot. Expanse 46 mm.

Hab.—Jalapa, Mexico.

Carpella interrupta.—Head black. Body white. Primaries: costa to near apex black; a median and an outer black line, parallel and slightly oblique outwardly from inner margin to middle of cell and vein 5 respectively. Secondaries with a black outer line from inner margin just above anal angle to vein 6. Underneath similar. Expanse 54 mm.

Hab.—Bolivia.

Nipteria virginata.—Frons yellow. Body white. Wings silvery white without markings; the costa of primaries very finely black. Expanse 30 mm.

Hab.—Castro, Parana. Allied to *cillenaria* Gn., = *impositoria* Walker.

Nipteria claudaria.—Body dark grey. Primaries above dull white, with the apex from beyond cell and outer margin dark grey. Secondaries light grey, the outer margin darker. Underneath the dark apical portion of primaries is crossed by a whitish shade. Secondaries brownish grey, with a darker transverse median shade. Expanse 30 mm.

Hab.—Castro, Parana. This species is allied to *N. legata* Dogn.

Parrhesia nebula.—Body pale grey. Wings whitish grey; a small dark spot at the end of the cell. Primaries with an indistinct, curved, wavy, dark line; an outer dentate dark grey line, angled below apex and then parallel to outer margin. Secondaries with an outer and subterminal, dentate, dark grey line. Underneath brownish grey, the disk of primaries whitish and the lines as on upper surface. Expanse 21 mm.

Hab.—Castro, Parana. The markings are very similar to *P. philyroides* Dogn., but the color is different.

Subfam. Acidalinæ.

Odontoptila siculodaria.—Wings white, thinly irrorated with brown and grey scales; a fine greyish inner line curved below costa of primaries: a fine median line, outwardly shaded with brown above median vein on primaries, and broadly shaded with grey on secondaries; the outer line fine, wavy, beyond which the outer margin is tinged with pale brown and crossed by a wavy white subterminal line; on secondaries some dark grey shading between the outer and subterminal line; a terminal dark line; the fringe white, flecked with black, a black point in the cells. Underneath similar, with the shadings on secondaries brown, irrorated with black. Expanse 24 mm.

Hab.—Oaxaca, Mexico.

Dichromatopodia oaxacana.—Violaceous brown, with a slightly darker median shade. Primaries with an inner buff line angled at costa, then straight to inner margin; an outer buff line slightly curved below costa. Secondaries with only an outer line evenly curved. Underneath paler, without markings. Expanse 21 mm.

Hab.—Oaxaca, Mexico.

Dichromatopodia zova.—Reddish brown. Wings with an indistinct darker median shade; lines narrow, paler; the inner line angled at costa, then straight to inner margin; outer line parallel to outer margin; discal spots black, containing some grey scales on primaries. Secondaries with only the outer line. Underneath reddish; the secondaries somewhat yellow. Small black discal spot in cells. Expanse 26 mm.

Hab.—Orizaba, Mexico. Allied to *D. sigillata* Walk., but larger.

Dichromatopodia naltona.—Wings pale reddish brown; discal spots semilunar, white, partly edged with black scales; inner line on primaries only, consisting of scattered black scales; outer line buff, angled at vein 6 on both wings, then curving slightly inwardly to inner margins, and broadly shaded on either side, with scattered black scales. Underneath pale reddish brown, with a fine black outer line. Expanse 21 mm.

Hab.—Aroa, Venezuela.

Dichromatopodia paulena.—Wings buff, thickly irrorated with reddish scales. Primaries: the outer margin broadly violaceous, limited by a buff line curved from costa to vein 2, then straight to inner margin; the basal half of costa yellowish; an inner buff line outwardly oblique from costa: discal spot large, violaceous, with a paler center. Secondaries: discal spot small, triangular, violaceous: outer margin as on primaries. Underneath yellowish red. Expanse 24 mm.

Hab.—Sao Paulo, S. E. Brazil.

Anisodes stollaria.—Body light brown, spotted with black on thorax and at base of abdomen. Wings light brown. Primaries: a small buff spot in cell, circled with reddish brown; inner and outer interrupted, black lines; geminate subterminal and terminal black spots, except between 2 and 4. Secondaries

with inner and outer lines as on primaries; also a median wavy shade, reddish brown between veins 2 and 4, otherwise black; discal point whitish, circled with black; the apical space beyond cell and above vein 4 suffused and thickly spotted with black; black spots from anal angle to median line on inner margin. Underneath pale reddish, with an outer punctiform line. Expanse 27 mm.

Hab.—Jalapa, Mexico; Castro, Parana.

Anisodes jonaria.—Wings light brown, thickly irrorated with greyish scales, forming distinct median and subterminal shades; an inner, an outer and a terminal row of conspicuous black points; discal spots white, circled with black. Underneath primaries reddish, with an outer and a terminal row of black points; a small discal spot. Secondaries luteous; the costa reddish; an outer reddish line spotted with black on veins; terminal black points and reddish shading along the outer margin; a dark discal spot. Abdomen brown; a dorsal pale streak. Expanse 24 mm.

Hab.—Castro, Parana. Allied to *A. megista* Druce.

Anisodes monera.—Body light brown. Wings light brown; an inner, outer and terminal row of black points; discal points white, surrounded by a reddish shade; a reddish median shade from discal point to inner margin. Underneath primaries pale reddish, secondaries luteous; an indistinct outer punctiform shade. Expanse 24 mm.

Hab.—Orizaba, Mexico.

Anisodes fantomaria.—Wings buff, irrorated with black scales, especially from base to median shade; minute white discal points, circled with black; a median wavy grey shade; the outer line black, very fine, wavy; a subterminal row of large black spots between the veins; a terminal row of black points. Primaries with a fine black inner line, nearly straight. Underneath pale luteous; black discal points; indistinct black subterminal spots on primaries. Expanse 22 mm.

Hab.—Aroa, Venezuela.

Anisoodes foliata.—Wings yellowish, almost entirely covered with reddish striæ; an inner, an outer and a terminal row of black points; a median wavy grey shade; discal points white, circled with grey. Underneath reddish, with the outer points less distinct, and connected by a greyish shade; terminal black points. Expanse 25 mm.

Hab.—Sao Paulo, S. E. Brazil.

Anisodes excavaria.—Body brown; three large triangular silvery white spots dorsally on abdomen. Wings brown; the costa of primaries with black striæ; inner, outer and terminal rows of black points; discal points white, circled with black. Underneath reddish; the outer row of points connected by a darker red shade; the terminal spots larger than on upper surface. In the male the primaries are excavated below the apex; the outer margin at vein 3 being in a line with the apex. Expanse 16–21 mm.

Hab.—Sao Paulo, Castro, S. E. Brazil.

Anisodes castraria.—Body yellowish. Wings yellow, irrorated with violaceous grey scales; an inner grey line curved above and below median vein on both wings; straight grey line from costa of primaries at three-fourths from base to middle of inner margin. Secondaries: an outer grey lunular line punctiform on veins; a double subterminal angular line, the angles opposed to each other and touching; a terminal grey line. On primaries a minute black discal point; on secondaries a large silvery white spot finely edged with brown. Underneath dull luteous, with the lines much less distinct. Expanse 32 mm.

Hab.—Castro, Parana.

Anisodes obliquaria.—Body light buff; the abdomen with three transverse brown lines. Wings pale buff, slightly irrorated with brown scales. Primaries: the costa greenish grey: a brownish line inwardly shaded with greyish from centre of inner margin very obliquely to vein 4, which is itself black from the cell to outer margin; above vein 4, near the outer margin, a lunular reddish brown mark, outwardly shaded with greyish; a few inner and outer dark points on veins; terminal intervenal dark points, and a terminal dark line between veins 4–7. Secondaries: a geminate dark basal line; an outer geminate reddish line from inner margin to vein 4, and a row of points thence to costal margin; a subterminal brown mark and greyish shadings at vein 4; a terminal dark line. Expanse 36 mm.

Hab.—Sao Paulo, S. E. Brazil.

Ephyra alicia.—Wings pale fawn color, with a few scattered brown scales; inner and median lines slightly darker, more heavily marked on secondaries; outer line very fine brown, angular, marked with black points at costa, between veins 4–6 and at inner margins; a terminal brown line, punctiform between the veins. On primaries discal spot small, white, outwardly shaded with reddish brown. On secondaries large, black, with some white scales in centre. Expanse 26 mm.

Hab.—Tijuca, Brazil.

Charommataea marginata.—Wings yellow in the male, roseate in the female, irrorated with a few black and white scales. Primaries: basal half of costa violaceous; inner, median and outer lines fine, wavy, brownish; outer margin from inner angle to above vein 5 broadly violaceous; fringe red. Secondaries: median and outer lines as on primaries; extreme margin and fringe violaceous. Expanse 25–29 mm.

Hab.—Guadalajara, Orizaba, Mexico.

Cnemodes pertumna.—Wings white, irrorated with grey scales; discal spots pale green, edged with darker green; median and outer lines grey, wavy, dentate; a terminal grey line, with black intervenal points; fringe white, with black points at ends of veins; on primaries an inner grey line. Underneath white, only the disc of primaries irrorated with grey; the lines darker and more distinct. Expanse 30 mm.

Hab.—Peru.

Cnemodes mizteca.—Wings light brown. Primaries: inner line fine, dark; median shade very broad, dark brown, inwardly reddish brown; discal spot blackish, with paler centre; outer line very fine, wavy, lunular; fringe brown at base, outwardly dark grey. Secondaries: the median line and discal spot as on primaries; the outer line almost imperceptible Underneath reddish brown, with slight median shade, and blackish discal blotches. Expanse 24 mm.

Hab.—Oaxaca, Mexico.

Cnemodes pierta.—Wings yellow, irrorated with reddish scales; discal point white, edged with red; outer line fine, reddish, wavy as in *C. indigaria* Gn.; a straight reddish brown line from costa of primaries, close to outer line, to middle of inner margin on secondaries; a terminal reddish line. Underneath luteous, showing the lines of upper side. Expanse 22 mm.

Hab.—Jalapa, Mexico.

Cnemodes sabuloides.—Wings pale olivaceous grey, thickly irrorated with darker grey scales; a brownish median shade crosses both wings; an outer fine brownish shade, punctiform on veins; the discal spots small, black, the spot on secondaries somewhat larger than the spot on primaries; a grayish terminal line; fringe grey, mixed with brown scales. Underneath with discal spots and outer punctiform line. Expanse 30 mm.

Hab.—Jalapa, Mexico.

Cnemodes dudisca.—Wings whitish, very thickly irrorated with olivaceous grey and brown scales. Primaries: inner line fine, brownish, forming two outward curves; discal point white, edged with brown; median shade angled below costa, then slightly sinuous to inner margin; outer line black, lunular, the curves inward, and followed by a darker shade between veins 4 6; an interrupted terminal line. Secondaries: median line less distinct; discal spot smaller and very indistinct; outer line as on primaries. Underneath reddish; the discal spots and outer line as on upper side. Expanse 29 mm.

Hab.—Orizaba, Mexico.

Cnemodes cantona.—Wings pale buff, thinly irrorated with brown scales. Primaries: a minute point in the cell; inner line fine, indistinct; median shade greyish, somewhat dentate below costa, curved below cell; outer line consisting of dark brown points on the veins; a terminal brown line; fringe white, with brown points at ends of veins. Secondaries: discal spot large, dark brown, more or less filled in with creamy buff; median line crossing discal spot; outer and terminal line as on primaries. Underneath with the outer line dentate, very distinct; the median line on primaries only.

Hab.—Orizaba, Mexico.

Ptychopoda grasuta.—Vertex white. Body grey. Wings whitish, thickly irrorated with grey scales; a minute black point in the cell; the lines very indistinct; the outer line like a broad darker grey shade; a terminal black line interrupted by veins. Expanse 20 mm.

Hab.—Orizaba, Mexico. Also allied to *P. jamaicensis* Warr.

Ptychopoda canthema.—Wings pale buff, irrorated with black and grey scales; a cluster of black scales in the cell; inner and median lines very indistinct, except at costal blotches on primaries; outer line dark grey, dentate; a subterminal line, parallel and similar to outer line; a terminal dark line interrupted by veins. Expanse 22 mm.

Hab.—Oaxaca, Mexico. Antennæ with long hairs, not so dense as in *P. jamaicensis* Warr.

Cosymbia jarata.—Wings whitish, thinly irrorated with gray scales; black discal points in cells; inner and median lines wavy, grey; outer line slightly dentate and punctiform on veins, black; outer margin broadly grey, with a whitish subterminal wavy line; terminal intervenal dark spots; fringe white. Expanse 20 mm.

Hab.—Rio Janeiro. Very much like *Ptychopoda jamaicensis* Warr., but has pectinate antennæ.

Deptalia atomaria.—Wings pale buff, thinly irrorated with violaceous brown scales; the costa of primaries more thickly irrorated, also a median line; an inner and an outer row of black points on the veins; a terminal reddish brown line, interrupted on either side of veins. Expanse 19 mm.

Hab.—Orizaba, Mexico. *Deptalia* was created by Hulst for *Acidalia insulsaria* Gn. Other species belonging to the genus are *Ephyra rudimentaria* Gn. = *A. tepidata* Walker, *A. asthenaria* Walker, *A. invariata* Walker, *A. numitoria* Druce, *Pleuroprucha roseipuncta* Warr. *Pleuroprucha* Mösch., has an accessory cell which is not present in *Deptalia*.

Deptalia obscurior.—Wings light brown, irrorated with darker scales, especially on costa of primaries; a dark line at end of cells; an outer row of black points on veins; a terminal row of dark spots; an indistinct inner line on primaries. Expanse 18 mm.

Hab.—Orizaba Mexico.

Deptalia minuta.—Wings pale buff, crossed by wavy pale violaceous bands; the costa of primaries broadly pale buff; primaries with three inner, a broad median, an outer, a broad submarginal, and a terminal band, the latter broadest at apex. Secondaries with two basal, a median, an outer, a broad subterminal and a terminal line; a black point in the cells; fringe yellowish buff. Underneath luteous, with a distinct black point in the cells. Expanse 11 mm.

Hab.—Miami, Florida.

Hæmalea damaria.—Wings with basal half violaceous, containing a yellow discal spot; outer half yellow; an outer and subterminal, wavy, violaceous line; a terminal violaceous line; the subterminal on primaries interrupted and extending to terminal at inner angle. Expanse 17 mm.

Hab.—Sao Paulo, S. E. Brazil.

Hæmalea vizaria.—♂. Body fawn color, vertex dark brown. Wings whitish fawn color, irrorated with brown, especially on the outer half. Primaries: costa brown; an inner brown line angled on costa, then straight to inner margin; a large brown discal spot, edged with blackish brown and divided by the pale discocellular; an outer geminate, brown, dentate line, followed by some brown shadings; a wavy, dentate, subterminal, dark brown line; the outer margin dark brown from vein 6 to inner angle. Secondaries with the discal spot formed of a geminate dark brown streak; the outer and subterminal lines as on primaries, but less distinct. Underneath paler, with the lines all showing. Expanse 26 mm.

♀.—Darker. Primaries: the inner line more wavy; the outer margin much darker between veins 3-7; median space suffused with dark grey scales. Expanse 31 mm.

Hab.—Sao Paulo, S. E. Brazil; Castro, Parana.

Lipomelia nubilata.—Body light brown. Wings light brown, irrorated with some reddish brown scales. Primaries: base darker, limited by the inner line which is angled on costa, then straight to inner margin; a median dark line, inwardly oblique to inner margin near the inner line, and passing close beyond an upright white discal line; the space beyond median line between veins 2 and 6 dark violaceous brown; the apex also darker and limited by a subapical line from costa to outer margin at vein 6; a terminal violaceous line. Secondaries thickly irrorated with violaceous brown; only the terminal line visible; fringe yellow, spotted with violaceous. Underneath the secondaries are luteous, with a subterminal line. Expanse 18 mm.

Hab.—Peru. In shape and arrangement of lines, this species is very close to *L. divaricata* Warr.

Subfam. Sterrhinæ.

Asellodes vitraria.—Primaries with a little more than the basal half vitreous, except the costa, inner margin and a median band, which, with the outer margin, are lilacine-grey, thickly irrorated with olivaceous scales; there is an outer greenish buff shade and a subterminal similar shade, the latter edged on either side with dark brown and black scales, especially at inner angle. On secondaries a large median vitreous space is surrounded by six smaller vitreous spots, otherwise the wing is lilacine, irrorated with dark scales, and there are some greenish buff shadings on outer margin below apex. Expanse 29 mm.

Hab.—Ecuador. The secondaries in this species are prolonged acutely at veins 6 and 7, and broadly at anal angle. The shape of the wings is more like that of the ♀ of *A. fenestraria* Gn. On the secondaries vein 5 is nearer 6 than 4, so the genus should no doubt be placed in the Geometrinæ.

SOME NEW ACULEATE HYMENOPTERA FROM ILLINOIS AND FLORIDA.

BY CHARLES ROBERTSON.

TIPHIA Fabr.

MALES.

Apex of first segment of abdomen strongly produced and constricted. **floridana** n. sp.

Apex of first segment of abdomen not strongly produced and constricted.....1.

1. Wings whitish hyaline.....3.
   Wings yellowish, or yellowish fuliginous.....2.
2. Face and mesonotum doubly punctate, clypeus narrowed at apex. **vulgaris** n. sp.
   Face and mesonotum not doubly punctate, clypeus broad at apex. **clypeata** n. sp.
3. Large, nervures dark, segments 3–5 of abdomen with coarse punctures. **punctata** n. sp.
   Small, nervures pale, abdomen more evenly punctured. **illinoensis** n. sp.

FEMALES.

Pigidium strongly puncto-striate throughout.....**floridana** n. sp.
Pigidium puncto-striate on basal half.....1.

1. Wings yellowish.....**vulgaris** n. sp.
   Wings whitish.....**illinoensis** n. sp.

Tiphia floridana n. sp.

♂.—Black; face opaque, with a double punctuation; mesonotum coarsely punctured; apical half of wings yellowish, marginal cell surpassing second submarginal; first segment of abdomen on the middle with a transverse ridge, beyond coarsely punctured, towards apex produced to a smooth, shining, impunctate, somewhat pointed tubercle, beyond which it is strongly constricted, elsewhere the abdomen rather coarsely punctured, the punctures closer on apical segments. Length 9–10 mm.

♀.—Differs from females of *Tiphia* known to me by the pigidium being coarsely and strongly puncto-striate throughout. Length 14 mm.

Inverness, Florida; 3 ♂, 1 ♀ specimens.

Tiphia vulgaris n. sp.

♂.—Face and mesonotum opaque, doubly punctured, clypeus narrowed towards the apex, which is emarginate; wings yellowish or yellowish fuliginous; abdomen rather finely punctured. Length 7–11 mm.

♀.—Wings yellowish, pigidium hardly puncto-striate beyond apical half. Length 12–14 mm.

Carlinville, Illinois; Orlando, Florida; 37 ♂, 8 ♀ specimens. This is a common species and may be the same as *T. inornata* Say.

Tiphia clypeata n. sp.

♂.—Face shining, coarsely and rather sparsely punctured; clypeus broad, subquadrate, slightly narrowed towards apex, which is subtruncate; wings a little yellowish; abdomen shining, quite sparsely punctured, except towards apex. Length 7–10 mm.

Carlinville, Illinois; 7 ♂ specimens. I do not know the female, or cannot separate it from female of *T. vulgaris.*

Tiphia illinoensis n. sp.

♂.—Face shining, rather sparsely punctured above; clypeus strongly narrowed anteriorly; wings whitish, nervures rather pale, third transverse cubital nervure rather perpendicular to costal margin, not, or hardly, surpassing apex of marginal cell; truncation of metathorax rather rugose; abdomen rather coarsely and closely punctured, apical margin of first segment rather strongly constricted. Length 7–9 mm.

♀.—Wings whitish, apical half of pigidium not puncto-striate. Length 8–11 mm.

Carlinville, Illinois; 32 ♂; 10 ♀ specimens.

Tiphia punctata n. sp.

♂.—Closely resembles male of *T. illinoensis*, but the nervures darker, segments 3–5 of abdomen finely and closely punctured at base, coarsely and sparsely punctured beyond. Length 11 mm

Carlinville, Illinois; 1 ♂ specimen.

The following table of *Odynerus* contains all of the species of *Stenancistrocerus* and *Stenodynerus* which I have taken in Illinois and Florida.

ODYNERUS Latr.

MALES.

Belongs to *Odynerus*, to the group of *O. foraminatus*..... **apopkensis** n. sp.
Belongs to *Stenodynerus*. segment 1 of abdomen without any suture or transverse fluting on edge of truncation.....7.
Belongs to *Stenancistrocerus*, segment 1 of abdomen with a suture and transverse fluting on edge of truncation.....1.
1. Posterior ocelli without two tubercles or crests between and near them.....6.
Posterior ocelli with two tubercles between them.....2.
2. Tubercles elongated, passing before the ocelli..... **fulvipes** Sauss.
Tubercles not so elongated.....3.
3. Tubercles prominent, border of segment 2 reflexed perpendicular to line of profile..... **bicornis** n. sp.
Tubercles less prominent, border of segment 2 not so reflexed.....4.
4. Clypeus strongly punctate, flagellum fulvous beneath..... **bifurcus** n. sp.
Clypeus feebly punctured, flagellum black.....5.
5. Ornaments mostly red, segment 1 usually red..... **histrio** Lep.
Ornaments yellow, segment 1 black..... **histrionalis** n. sp.
6. Clypeus bidentate, border of segment 2 reflexed..... **sæcularis** Sauss.
Clypeus broadly truncate, border of segment 2 not reflexed **clypeatus** n. sp.

7. Postscutel black, scutel marked with yellow....16.
Postscutel not black, scutel black....8.
8. Posterior ocelli without tubercles between them*....11.
Posterior ocelli with tubercles between them....9.
9. Clypeus bispinose, flagellum black....**vagus** Sauss.
Clypeus bidentate, flagellum not black beneath....10.
10. Ornaments often red, base of femora reddish....**oculeus** n. sp.
Ornaments yellow, base of femora black....**illinoensis** n. sp.
11. Clypeus truncate....**anormis** Say.
Clypeus more or less emarginate and bidentate....12.
12. Margins of segments 2 and 3 of abdomen reflexed....**fundatus** Cr.
Margin of segment 3 not reflexed....13.
13. Margin of 2 not reflexed....15.
Margin of 2 reflexed....14.
14. Ornaments yellow, margin of 2 reflexed perpendicular to line of profile.
pedestris Sauss.
Ornaments mostly red, margin of 2 not so strongly reflexed.
fundatiformis n. sp.
15. Segment 1 of abdomen red, ornaments more or less red....**australis** n. sp.
Segment 1 black, ornaments yellow....**perennis** Sauss.
16. Concavity of metathorax narrow....**acolhuus** Sauss.
Concavity of metathorax broad....**zendaloides** n. sp.

FEMALES.

Belongs to *Stenodynerus*....8.
Belongs to *Stenancistrocerus*....1.
1. Tubercles between posterior ocelli wanting....6.
Tubercles present, less evident than in males....2.
2. Ornaments mostly red....5.
Ornaments yellow....3.
3. No spots on segment 2 of abdomen....**fulvipes** Sauss.
A spot on each side of 2....4.
4. Clypeus coarsely punctured, bidentate....**bicornis** n. sp.
Clypeus less coarsely punctured, less bidentate....**histrionalis** n. sp.
5. Clypeus coarsely punctured, bidentate, segment 1 of abdomen usually red, with anterior face and basal middle of superior face black.
bifurcus n. sp.
Clypeus less coarsely punctured, less bidentate, segment 1 of abdomen usually red, with base black....**histrio** Lep.
6. Apex of clypeus emarginate, with dentiform angles....**sæcularis** Sauss.
Apex of clypeus broad, distinctly truncate....7.
7. Ornaments yellow....**clypeatus** n. sp.
Ornaments red....**floridanus** n. sp.
8. No tubercles between posterior ocelli....11.
Tubercles present, less evident than in male....9.
9. Clypeus rather strongly bidentate, large species....**vagus** Sauss.
Clypeus with faint dentiform angles....10.

* Males of *O. pedestris* sometimes show two small tubercles.

10. Base of femora reddish, segment 1 of abdomen usually red..**oculeus** n. sp.
Base of femora black, segment 1 black.....**illinoensis** n. sp.
11. Apex of clypeus truncate or a little rounded.....**anormis** Say.
Apex of clypeus emarginate, with dentiform angles.....12.
12. Ornaments mostly red, segment 1 of abdomen red..... **australis** n. sp.
Ornaments yellow.....13.
13. Both borders of prothorax yellow, segment 2 more globular, its border reflexed.....**fundatus** Cr.
Anterior border of prothorax yellow, segment 2 not globular, its border hardly reflexed.....**pedestris** Sauss.

Odynerus bicornis n. sp.

♀.—Clypeus strongly punctured, apex narrow, with two dentiform angles; head and thorax coarsely punctured; posterior ocelli with two tubercles between them; metathorax shining, coarsely reticulated, its concavity punctured, the borders blunted; first segment coarsely and closely punctured, the second more finely and sparsely punctured; fluting on first segment distinct, border of second coarsely punctured, somewhat reflexed. Black, with yellow ornaments as follows: spot on base of mandibles, arcuate line on clypeus, scape in front, spot on front, spot in sinus of the eye, postocular spot, interrupted border of prothorax, tegulæ, spot beneath, postscutel, four small spots on metathorax, borders of abdominal segments 1, 2 and 4, oblique line on each side of 1, spot on each side of 2, knees, tibiæ and tarsi. Length 9 mm.

♂.—Clypeus strongly punctured, strongly bidentate; tubercles between posterior ocelli strongly produced, shining; border of second segment of abdomen strongly canaliculate, strongly reflexed perpendicular to line of profile. Ornaments about as in the female; a line in sinus of eye and clypeus entirely yellow, sometimes a spot on mesothorax, the spots on metathorax wanting, oblique line on first segment of abdomen reduced to a spot, border of fifth segment with yellow line; ornaments sometimes more red. Length 9–10 mm.

Inverness, Florida; 1 ♀, 5 ♂ specimens. The sexes were taken in copula.

Odynerus bifureus n. sp.

♀.—Closely resembles the female of *O. histrio*, but the clypeus is shorter, more strongly punctured, more bidentate; metathorax with its concavity less deep, more rounded, its borders more sharply defined; first two segments of abdomen more coarsely punctured, the margin of second segment more reflexed. The ornaments about the same; sides of metathorax largely red; first segment of abdomen with the apical margin yellow, the sides of superior portion entirely red, or with two oblique red lines; the legs a little darker at base. Length 9 mm.

♂.—Differs from the male of *O. histrio* in its clypeus being strongly punctured, strongly bidentate, with a deep notch between the teeth; concavity of metathorax with its borders more sharply defined; first and second segments of abdomen more strongly punctured, the border of second more strongly reflexed. The ornaments about the same as in *O. histrio* ♂, but the flagellum is fulvous beneath; metathorax more red on the sides; sides of first segment red on the superior portion. Length 9 mm.

Inverness, Florida; 2 ♀, 6 ♂ specimens.

Odynerus histrionalis n. sp.

♀.—Of the same size and structure of *O. histrio* ♀. The ornaments are the same, but yellow instead of fulvous or red. The arcuate line at summit of clypeus sometimes broken in two, or entirely wanting; metathorax black; first segment of abdomen black, sometimes with an oblique line or spot on the sides; two yellow spots on second segment; border of fourth segment usually—of third sometimes—more or less yellow; legs fulvous, femora largely blackish basally. Length 8–10 mm.

♂.—Also of the size and structure of *O. histrio* ♂. The ornaments yellow. There are two yellow spots on second segment, and the borders of third and fourth segments sometimes more or less yellow. Length 7–10 mm.

Carlinville, Illinois; 16 ♀, 17 ♂ specimens. Inverness, Florida; 3 ♂ specimens.

This species is closely related to *O. histrio*, the name being intended to indicate that relation. It may be a mere variety of that species. In both species the posterior ocelli have a pair of tubercles between them, more evident in the males, where—seen from the side—the near tubercle appears above the ocellus, the other conceals the ocellus of the other side. In the Florida Odyneri there seems to be a general tendency for the ornaments, as well as the ground color of the base of abdomen and base of legs, to become fulvous or red.

Odynerus clypeatus n. sp.

♀.—Clypeus rather strongly puncto-striate, its apex regularly truncate, about one-third the total width of clypeus; vertex with a concave depression behind ocelli; head and thorax rather strongly and confluently punctured; metathorax with a broad, heart-shaped concavity, notched behind postscutellum, carinate in the middle, with regular lateral, radiating lines; above the concavity shows some coarse reticulations, the edges sharp but irregular; above the metathorax is coarsely reticulated; the first segment of abdomen presents a suture on its anterior face, which is followed by a fluting, so that the segment appears constricted at the edge of the truncation; beyond the fluting the segment is finely roughened, coarsely and confluently punctured; the second segment also finely roughened, but less coarsely and strongly punctured. Black; a dot on mandibles, sometimes wanting; more or less extensive, sometimes interrupted, arcuate line on summit of clypeus, line on scape, spot between antennæ, spot in sinus of eye, postocular spot, two spots on prothorax, tegulæ, spot under the wings, postscutellum, usually the lower borders of metathorax, borders of first and second segments of abdomen, two spots on second segment, borders of segments three and four, more or less, and the knees, tibiæ and tarsi yellow; the tarsi a little darker. Length 9–10 mm.

♂.—The clypeus more broadly truncate; the mandibles, clypeus, lower border of orbits, spots on coxæ, anterior and middle femora more extensively, and borders of segments 1–6 of abdomen yellow. The flagellum beneath and the hook fulvous. Length 7–8 mm.

Carlinville, Illinois; 8 ♀, 51 ♂ specimens.

Odynerus floridanus n. sp.

♀.—Clypeus pyriform, its punctures rather fine and sparse, its apex broad, regularly truncate; head and thorax with not very coarse punctures; metathorax almost truncate, its concavity shallow, finely striate, border sharp; anterior face of first segment of abdomen with a rather distinct suture, followed by a fluting, superior face coarsely and closely punctured, second segment with the punctures rather fine and sparse. Black; tegulæ, margin of second segment of abdomen and the legs, except base of hind pair, yellow; red ornaments as follows: spot on mandibles, arcuate line on clypeus, scape in front, spot on front, spot in sinus of eye, postocular spot, two large spots on prothorax, spot under the wing, postscutel, sides of metathorax, superior surface of first segment of abdomen, and a large spot on each side of second segment. Length 8 mm.

Inverness, Florida; 2 ♀ specimens. Closely related to *O. clypeatus*. It may be only a variety of that species.

Odynerus apopkensis n. sp.

♂.—Clypeus almost regularly pentagonal, the apex arcuate, with dentiform angles; head coarsely and confluently punctured; thorax even more coarsely, the intervals with finer punctures; postscutel somewhat crested, crenulate; concavity of metathorax rather deep, small, striate, rounded, without lateral angles, the superior ridges sharp, separated above from postscutel by a notch; abdomen rather strongly truncate at base, conical, the first segment short, nearly as wide as second, first two segments finely roughened, with shallow, rather sparse punctures, borders of segments 2–5 coarsely punctured, the punctures interspersed with finer punctures. Black; clypeus pale yellow; base of mandibles, line or spot between antennæ, and hook of antennæ pale or orange yellow; border of second segment of abdomen yellow; first two joints of antennæ and the legs orange-red; red ornaments as follows: postocular spot, prothorax, except hind angle, tegulæ, spot beneath, postscutel, sometimes sides of metathorax, first segment of abdomen, except anterior face, a large triangular patch on each side of base of second segment connected with two large more or less confluent patches on the ventral surface. Length 10–13 mm.

Inverness, Florida; 4 ♂ specimens. This species belongs to the group of *O. foraminatus* Sauss.

Odynerus fundatiformis n. sp.

♂.—Of the size, form and structure of *O. fundatus* Cr. ♂, the margin of second segment of abdomen reflexed, but not the third also as in that species; the second segment also less swollen. Black: clypeus, labrum, base of mandibles, line between antennæ, lower border of orbits in front, scape in front, spot behind tegulæ, spots on coxæ and knees yellow; postscutel, borders of abdominal segments 1–4, and two spots on base of second segment orange-yellow; flagellum beneath, legs, spot behind eye, prothorax, tegulæ, spot beneath, sides of metathorax, segment 1 of abdomen, except base, red. Length 11 mm.

Inverness, Florida; 1 ♂ specimen.

Odynerus australis n. sp.

♀.—Clypeus rather coarsely punctured, as wide as long, apex concave, arcuate, with dentiform angles; head and thorax shining, rather coarsely, not very

closely punctured; concavity of metathorax rather deep, shining, striate below, punctured above; ridges blunted, with coarse reticulations somewhat concealed by a close silvery sericeous pubescence; segment 1 of abdomen without any suture or transverse fluting, the superior face coarsely punctured, segment 2 with more fine, more shallow punctures, the apical margin coarsely punctered, not reflexed. Black, scape beneath, and segment 1 of abdomen red; legs more or less red or yellow; spot on mandibles, arcuate line on clypeus, spot between antennæ, spot in sinus of eye, tegulæ, their appendix, postscutel, and borders of segments 1 and 2 of abdomen yellow; sometimes the border of segment 1 is connected with a yellow lateral spot; postocular spot, prothorax in front, and spot under the wings yellow or red; sometimes there is a red spot on each side of metathorax at base above and on each side of base of segment 2. Length 9–10 mm.

♂.—Mandibles, labrum, clypeus, scape beneath, wedged-shaped mark between antennæ, lower border of orbits in front, knees, tibiæ and tarsi yellow; the ornaments of thorax yellow or red; flagellum fulvous beneath, middle coxæ, and sometimes hind ones yellow or red; the femora, especially the hind pair, red at base; segments 4 6 of abdomen sometimes with yellow borders; otherwise as in female. Length 7-8 mm.

Inverness, Florida; 3 ♀, 6 ♂ specimens.

Odynerus oculeus n. sp.

♀.—Clypeus finely and sparsely punctured, its apex emarginate, with dentiform angles; head and thorax coarsely punctured; posterior ocelli with two tubercles between them; concavity of metathorax rather deep, rounded, opaque, striate, on the sides above reticulate; ridges of metathorax blunted, coarsely reticulated; segment 1 of abdomen without a trace of suture or fluting, coarsely punctured; segment 2 less coarsely punctured, except on apical margin, which is not reflexed. Black; mandibles, apex of clypeus, first three joints of antennæ, especially beneath, femora at base, especially the hind pair, usually the first segment of abdomen, sometimes marks on sides of metathorax and two spots on ventral surface of segment 2 of abdomen red; spot on mandibles, arcuate line on summit of clypeus, spot between antennæ, spot in sinus of eye, postocular spot, two spots on prothorax, tegulæ, their appendix, spot beneath, postscutel, sometimes a spot on each side of metathorax above, fasciæ on apical margin of segments 1 and 2, and sometimes 4, oblique line on 1, spot on each side of 2, fascia on 2 beneath, knees, tibiæ and tarsi, yellow; sometimes these ornaments are orange-yellow or even more or less red. Length 9 mm.

♂.—The clypeus bidentate, tubercles between posterior ocelli quite conspicuous, resembles the female. Two or three basal joints of flagellum, at least beneath, red; flagellum reddish beneath, hook black; mandibles, labrum, clypeus, scape in front, wedge-shaped mark between antennæ, another in sinus of eye, middle coxæ in front, and two large spots on ventral surface of segment 2 of abdomen, yellow; postocular spot, two spots on prothorax, tegulæ, their appendix, spot beneath, postscutel, borders of segments 1 and 2 of abdomen, usually an oblique spot on 1, a spot on each side of 2, border of 2 beneath, knees, tibiæ and tarsi usually yellow, sometimes orange-yellow or reddish; sometimes anterior and hind coxæ in front, extreme sides of segment 2, more or less complete fasciæ on 4–6, and on 3 and 4 beneath, yellow; sometimes there is a red mark on sides of metathorax; segment 1 of abdomen, except extreme base, usually red, sometimes superior face tinged with black; rarely this segment is black, with the usual yellow ornaments. Length 7-9 mm.

Orlando and Inverness, Florida; 4 ♀, 30 ♂ specimens.

Odynerus illinoensis n. sp.

♀.—Clypeus rather sparsely and finely punctured, its apex narrow, nearly truncate, but with slight dentiform angles; two inconspicuous tubercles between posterior ocelli and a depression behind them; metathorax not shining, rather finely reticulated, the borders of the concavity rounded; first segment without any trace of a suture; the insect rather coarsely punctured; border of second segment of abdomen very slightly reflexed Black; the yellow ornaments as follows: base of mandibles, arcuate line on summit of clypeus, sometimes interrupted and forming two spots, often a subquadrate spot towards apex of clypeus, the scape in front, spot between antennæ, spot in sinus of eye, a postocular spot, two spots on prothorax, tegulæ, their appendix, spot under wing, postscutellum, often a spot on mesothorax, a round spot on each side of metathorax above, sometimes wanting, sometimes a spot or line on each side below, or the entire lateral borders of metathorax, apical margins of abdominal segments 1, 2, 4 and 5, and extreme sides of 3, an oblique spot on each side of 1, two spots on 2 above, and sometimes two spots on ventral surface beneath, knees, tibiæ and tarsi, the anterior and middle femora more broadly yellow at tips. Length 7-9 mm.

♂.—Clypeus polygonal, almost impunctate, apex bidentate; the tubercles between posterior ocelli more evident than in the female; apical margin of second segment of abdomen a little more reflexed. The clypeus entirely, the mandibles, flagellum beneath, a line between the antennæ, and the lower borders of the eyes in front, yellow; the marks on metathorax and the spot on mesothorax usually wanting; the oblique spot on first segment often reduced to a dot; the second segment of abdomen beneath has two large spots; the apical margin of sixth segment is often yellow, but sometimes only the first two segments have a yellow border; the anterior and middle femora have the yellow marking extending nearly to the base; the middle coxæ, and sometimes the front and hind ones, with a yellow spot. Length 7-8 mm.

Carlinville, Illinois; 18 ♀, 5 ♂ specimens. This may be only a variety of *O. oculeus.*

Odynerus zendaloides n. sp.

♂.—Belongs to the group of *O. acolhuus* and *zendalus.* Head and thorax coarsely punctured; clypeus subquadrate, or rather transverse diamond shaped, broader than long, coarsely punctured, the apex strongly bidentate; interval between ocelli strongly elevated, parted by a groove; thorax broad anteriorly, narrowing posteriorly; prothorax with crested, dentiform angles; postscutellum short, truncate, strongly crested, with a sharp crenulate ridge, upper half of posterior face strongly punctured, lower half smooth and shining; metathorax with a broad, deep, circular, closely punctured concavity, the borders rounded, rather sparsely and coarsely punctured; articular spines simple, black; abdomen spindle shaped; first segment cup shaped, coarsely punctured, a little constricted before apex; second segment with smaller, more shallow punctures, except on apex, where it is a little canaliculate. Black, with yellow ornaments as follows: clypeus, except anterior border, scape in front, interrupted band on prothorax, tegulæ, spot under the wing, more or less interrupted band, or two spots on scutel, narrow borders of abdominal segments 1-3, border of 2 beneath, knees, tibiæ and tarsi; the color of legs more reddish. Length 8-9 mm.

Carlinville, Illinois; 3 ♂ specimens.

Pompilus illinoensis n. sp.

♀.—Velvety black, opaque, abdomen sometimes with a purplish reflection;

clypeus subtruncate, or slightly emarginate; joint 3 of antennæ about five times as long as 2, about one-fifth longer than 4; posterior margin of prothorax angular; metathorax rounded, with a faint median impressed line, its apex reflexed: legs with numerous short spines, the front tarsi hardly ciliated; claws large, with a median tooth; wings violaceous black or fuscous, with a slight purplish reflection, apical margin usually more clouded; submedian cell of front wings longer than median, of hind wings equaling, or a little shorter than, median, both measured on the dividing nervures; marginal cell lanceolate, cubital cells 2 and 3 subequal, strongly narrowed above by curving transverse cubitals, 2 usually a little less strongly narrowed than 3, rarely subquadrate, 2 receiving the first recurrent nervure a little beyond the middle, 3 receiving the second about the middle. Length 8-15 mm.

♂.—Joint 3 of antennæ about four times as long as 2, equaling 4; claws large, cleft; wings a little less clouded, legs less spinose. Length 8-11 mm.

Carlinville, Illinois; 19 ♀, 10 ♂ specimens.

Differs from *P. æthiops* Cr. and *relativus* Fox by the posterior margin of prothorax being angular; from *P. philadelphicus* Cr. by its smaller size, blacker color, clypeus of ♀ not deeply emarginate, joint 3 of antennæ of ♂ not longer than 4; from *P. scelestus* Cr. by its venation, cleft claws of ♂, etc.

Tachytes distinctus Sm.

Tachytes distinctus Smith, B. M. Cat. Hym., 4, 307, 1856, ♀.
Tachytes crassus Patton, Proc. Bost. Soc. Nat. Hist., 20, 393, 1880, ♀.
Tachytes crassus Fox, Tr. Am. Ent. Soc., 19, 241, 1892, ♀ ♂.

Tachytes elongatus Cr.

Tachytes distinctus var B. Smith, B. M. Cat. Hym., 4, 307, 1856, ♀.
Tachytes elongatus Cr., Tr. Am. Ent. Soc., 4. 215, 1872, ♂.
Tachytes distinctus Fox, ibid, 19, 246, 1892, ♀.
Tachytes elongatus Fox, ibid., ♂.
Tachytes distinctus Fox, Proc. Acad. Sci. Phil., 1893, 504, ♀ ♂.

Oxybelus floridanus n. sp.

♂.—Of the same size, form and structure as *O. lætus* Say, and is perhaps a mere variety of that species. The ornaments the same: the black color of the legs replaced by orange reddish so that the legs appear quite different; the abdomen has fewer spots, one specimen with eight spots, the other with four; apical segment of abdomen rufous; otherwise quite as in *O. lætus*. Length 4-5 mm.

Inverness, Florida; 2 ♂ specimens.

Notoglossa inornata n. sp.

♀.—Clypeus with lateral dentiform angles and a median dentiform process, beyond which it is smooth and shining: prothorax carinate; scutel and postscutel carinate; squama as in *Oxybelus;* spine rather broad, emarginate; basal segment of abdomen with median impressed line; insect shining, rather closely and coarsely punctured. Black, with thin white pubescence on face, cheeks and sides; apical half of antennæ, tegulæ, base of wing, apical joints of tarsi testaceous; mandibles, anterior and middle tibiæ, and anterior tarsi yellow; apical segment of abdomen red. Length 4 mm.

♂.—Resembles the female; mandibles, knees, anterior and middle tibiæ, apex

of hind tibiæ and the tarsi pale yellow; in one specimen the scape is black, with a little yellow at tip, in another about half yellow, in the third the scape is entirely yellow; the tegulæ and base of wing darker than in ♀; there is a small spine on each side of sixth segment. Length 3-4 mm.

Carlinville, Illinois; 1 ♀, 3 ♂ specimens.

Notoglossa americana n. sp.

? *Oxybelus analis* Cr., Proc. Ent. Soc., 4, 149, 1865, ♀ ♂.

Oxybelus emarginatus Packard, Proc. Ent. Soc., 6, 435, 1867, ♀ ♂.

Oxybelus emarginatus Robertson, Trans. Am. Ent. Soc., 16, 84, 1889, ♀ ♂.

I had at least two specimens of the following mixed with the specimens upon which the above description was based, and that is probably true of Packard's material; at least, the small specimen from Illinois probably belongs to the next. But that did not seem to modify the descriptions in any essential. Of 31 ♀ specimens, 30 have two spots on scutellum; the abdomen is 8 spotted in 29, 6-spotted in 1, 4-spotted in 1; all have the fifth segment of abdomen more or less rufous. Of 42 ♂ specimens, 13 have spots on prothorax; 19 have spots on tubercles; the abdomen is 8-spotted in 6, 6 spotted in 7, 4 spotted in 26, and 2-spotted in 1. This may prove to be the same as *A. analis* Cr. or a mere variety of it.

Notoglossa emarginata Say.

Oxybelus emarginatus Say, Bost. Journ. Nat. Hist., 1, 375, 1837, ♂. LeConte Edit., 2, 757.

Oxybelus parvus Cresson, Proc. Ent. Soc., 4, 476, 1865, ♂.

Notoglossa emarginatus Ashmead, Can. Ent., 31, 162, 1899.

♀.—Closely, rather finely punctured; prothorax carinate; scutel moderately, postscutel strongly carinate; squama terminating in a curved point, not with a short lateral curved point which does not surpass the base, as in *N. americana* and *frontalis;* spine broad, excavated, emarginate; base of abdomen with median depression. Black, the face with some glittering hairs, not at all silvery; mandibles, line on prothorax, tubercles, two spots on scutel, inner edge of squama, sometimes extending across postscutel, knees, anterior tibiæ, middle tibiæ in front, hind tibiæ at base, and front tarsi, six or eight spots on abdomen, yellow; middle and hind tarsi fuscous; antennæ, except at base, more or less fulvous; tegulæ reddish testaceous, apical segment of abdomen rufous. Length 3-4 mm.

♂.—The face with silvery pubescence; no spots on scutel; middle tibiæ more yellow; middle and hind tarsi yellow or whitish, apical joints sometimes a little fuscous; prothorax with more or less evident yellow marks on the sides; of 9 ♂ specimens, the tubercles show yellow in 1; the abdomen 4-spotted in 5, 2-spotted in 1. Length 3-5 mm.

Carlinville, Illinois; 3 ♀, 9 ♂ specimens.

This species appears to run smaller than *N. americana.* The form of the squama shows a distinct species; the spine is not so broad as in that species; the ornaments are more yellow; the female has no silvery hairs on face; the prothorax more yellow, the band usually continuous and extending to tubercles; the spots on scutel larger.

THE SUBGENUS STYLURUS NEEDHAM: SELYS' GROUPS VI AND VII OF THE GENUS GOMPHUS (ODONATA), AND ON THE POSTANAL CELLS IN THE LATTER.

BY E. B. WILLIAMSON.

Size medium or large; thorax normally dark with paler markings; a pale stripe between the mid-dorsal carina and the humeral suture, isolated, not continuous above or below with other pale areas; in adults the general color of thorax and abdomen is a very dark reddish brown or black (excepting in *plagiatus*, where the thorax is somewhat lighter and the abdomen is brown), while the pale thoracic markings are bluish green in color (in tenerals yellow or greenish yellow). Front wings with two posttriangular cells (in *scudderi* usually, and in other species frequently, three in the first row); the branches of the anal vein normally enclosing first two open cells followed by two rows; the first postanal cell* irregular in form, its length about one and one half times its maximum width, one side formed by the second branch of the anal vein, which branch is distinctly angulated where it is met by the vein separating the first and second postanal cells; portion of anal vein bounding the first postanal cell longer than the portion of the second branch of the anal vein bounding the same cell; pterostigma ordinary or long.

♂.—First hamule slender, simple, partly or entirely concealed by the second, not unguiculated; second hamule laminate, as seen in profile tapering to an acute apex; sheath of penis large, rounded. Superior abdominal appendages widely divaricate, seen in profile the upper edge not as convex as in related species (*fraternus*, *crassus* and the *dilatatus* group), beyond the middle the outer side bevelled away to the apex, the bevelled portion with a narrow externo-ventral shelf with a crenulate margin; inferior appendage with its branches about equally or slightly more divergent than the superiors.

* The cells enclosed between these two branches of the anal vein may be called the *postanal cells*, thus avoiding any confusion with the *anal triangle* of authors; they make up the middle one of the three postcostal areas.

♀.—Frontal vesicle tuberculate, curving behind each lateral ocellus and ending there, or continued posteriorly, in which case each extremity is produced into a spine; the carina enclosing the vesicle thickened and produced on either side to form a spine between the lateral ocellus and the eye, this spine apparently correlated with a small dorsal subapical hemispherical excavation on each branch of the inferior appendage of the male. Vulvar lamina from very short to about one-fifth as long as the sternum of 9. Appendages longer than 10, acute. I have been unable to find a character which isolates the females in question as well as the males are isolated by the form of their superior abdominal appendages. The frontal vesicle, as in *amnicola*, *notatus* and *plagiatus*, is similar to certain other species in the genus. The posterior spines of *scudderi* and *spiniceps* are better developed in *brevis;* in copulation they would overlap the internal edges of the branches of the inferior appendage of the male. The lateral spine between the lateral ocellus and the eye is common to the genus, though in such species as *spicatus* and *exilis* it is reduced to the merest vestige. In general, in both sexes, the eyes are more approximated than usual in the genus, the vertex meets the frons in a very obtuse angle, the angle of the frons is rounded and low, and the occipital crest is low, but such characters, indefinite as they are, can hardly be used in isolating the group.

Professor Needham (Canadian Entomologist, vol. xxix, No. 7, pp. 167 and 177) has characterized the nymphs of *notatus*, *spiniceps* and *plagiatus* as follows: "Wing cases laid parallel along the back; third joint of antennæ cylindric, at least twice as long as wide; abdominal appendages longer than the 10th segment; front border of median lobe of labium straight, with the usual fringe of flat scales, but without teeth; abdomen not abruptly narrowed before the 9th segment; body spindle shaped, little flattened; fore and middle tibiæ with small external apical hooks, or with none; ninth abdominal segment one half longer than the eighth, its lateral margins nearly parallel; a minute mid-dorsal apical spine on the 9th segment only; lateral lobe of the labium with a strongly incurved end hook and teeth on the inner margin increasing in size posteriorly."

So far as known to myself the nymphs of the five species of this subgenus live only in running water, with the exception of *plagiatus* which is found in both flowing and still water.

1. Abdominal segment 8 longer than 9.* ♂.—Segments 7–9 greatly dilated; second hamule forked. ♀.—Vulvar lamina not shorter than one-seventh the sternum of 9 ..... 2.
   Abdominal segment 8 shorter than 9.* ♂.—Segments 7–9 slightly dilated; second hamule simple. ♀.—Vulvar lamina shorter than one-seventh the sternum of 9 ..... 3.
2. Segments 3–7 with a maculose longitudinal mid-dorsal stripe ... **amnicola.**
   Segments 3–7 basally annulate with yellow ..... **scudderi.**
3. Abdomen black, marked with yellow or green ..... 4.
   Abdomen yellowish brown, marked with yellow or green; labrum largely green, no distinct markings ..... **plagiatus.**
4. Abdominal segments 7 and 9 about equal in length; labrum with the margins and a more or less distinct central spot, yellowish ..... **spiniceps.**
   Abdominal segment 9 shorter than 7; labrum with the margins and a longitudinal median stripe (rarely reduced to a central spot), black.. **notatus.**

In listing the material examined of each species, mention is made of those persons and institutions to whom my thanks are due for the loan of specimens. At the Acad. Nat. Sci., Phil., I am indebted to Dr. Calvert; at the U. S. Nat. Mus., to Mr. Currie; at the M. C. Z., to Mr. Henshaw; and at Ohio State University, to Mr. Hine. Measurements, descriptions and notes given under each species have been made from material examined by myself, unless otherwise stated, and have no reference to hitherto published accounts of these species.

1. **Gomphus amnicola** Walsh., Proc. Acad. Phil., p. 396, 1862.
   Ab. ♂ 35; ♀ 35–36; H. w. ♂ 29–31; ♀ 33.
   Antecub. f. w. 11–14; h. w. 7–11.
   Postcub. f. w. 7–12; h. w. 8–12.

Face yellowish, labrum margined with black, rarely an indistinct median spot of same color; anteclypeus dark or pale; lower lateral edges of postclypeus more or less black, usually the lateral depressions also dark; suture between frons and clypeus, and frons above at base, black. Mesothoracic half-collar not interrupted, continuous with the pale area of the mid-dorsal carina, which includes the carina itself and usually a little on either side; dorsal stripes isolated, strongly convergent above, in one specimen continuous above with the pale of the mid-dorsal carina area; antehumeral pale stripe interrupted above and rarely also at other points; humeral and first lateral suture each with a black stripe, the latter interrupted above or more rarely complete. Abdomen with a maculose longitudinal mid-dorsal stripe. Legs black, first femora brown beneath, and last femora pale dorsally; in tenerals all the femora are pale and the tibiæ and tarsi brown.

♂.—Accessory genitalia of 2 black; sides of 8 and 9 each with a large yellow blotch; 10 and appendages black or very dark.

♀.—Abdominal segments laterally conspicuously marked with yellow; 8 and 9 scarcely dilated; vulvar lamina in length one-fourth to one-fifth sternum of 9.

*A character by no means always clearly evident in dried specimens; excepting for *spiniceps*, it may be generally said in this group that 8 and 9 are *about* equal.

Material Examined.

1 ♂, 1 ♀, Rock Island, Illinois; each labelled "Type;" ♁ with last 7 abdominal segments gone. U. S. Nat. Mus.

1 ♂, 1 ♀, Rock Island, Illinois. M. C. Z.

1 ♁, Galina, Illinois; Mr. Bean, collector. M. C. Z.

1 ♂, Bethlehem, N. Y.; July 6, 1870; Lintner collection. M. C. Z.

This species has also been reported from Iowa.

2. **Gomphus scudderi** Selys. Trois. Add. Syn. Gomph., p. 24 (or 752), 1873.

Ab. ♁ 43; ♀ 42–43. H. w. ♁ 34–35; ♀ 36–37.

Antecub. f. w. 14–15; h. w. 10–11.

Postcub. f. w. 11–12; h. w. 9–11.

Face olive or yellow (♀); labrum clear green or yellow (♀), margined with black, with or without trace of a median spot or longitudinal stripe; anteclypeus brown; lower half of frons in front, suture between frons and clypeus, lateral depressions and lower lateral edges of post-clypeus, and frons above at base, black. Mesothoracic half-collar interrupted in the middle; mid-dorsal carina black; dorsal stripes isolated; antehumeral pale stripe widely interrupted above, reduced to a short line below and a spot above; humeral and lateral sutures each with a complete stripe; the humeral and first lateral stripe enclose a parallel-sided pale area about as wide as the humeral stripe; pale area between the two lateral stripes reduced, interrupted above. Legs black; first femora, and to a lesser extent the second, paler beneath; third femora black or yellow basally. Abdomen with 3–7 basally annulate with yellow.

♁.—Accessory genitalia of 2 blackish; second hamule similar to that of *G. amnicola;* 8 and 9 each with a small dorsal basal spot and a larger irregular lateral basal one; 10 and appendages black.

♀.—Spines on vesicle of frons placed more closely to the lateral ocelli than in *G. spiniceps;* lateral spines short, conical. Abdominal segments 2–9 laterally conspicuously marked with yellow; 7–9 very slightly dilated; vulvar lamina in length about one-sixth the length of the sternum of 9. The vulvar lamina of the female of this species loaned me by Dr. Calvert differs from the specimen figured by the two thickened areas being more contiguous and with a thiner membranous area basally on either side, as well as between them; the outline of the lamina is the same in both cases.

Material Examined.

2 ♁, Russell Stream, Northeast Carry, Maine; August 29, 1899; F. L. Harvey, collector. E. B. Williamson.

1 ♀, Northeast Carry, Maine; August 29, 1899; F. L. Harvey, collector. Ohio State University.

1 ♀, Russell Stream, September 27, 1899; F. L. Harvey, collector. Dr. P. P. Calvert.

Selys' type of this species may possibly have been taken in Massachusetts or New Hampshire.

3. **Gomphus spiniceps** Walsh. (*Macrogomphus? s.*), Proc. Acad. Phil., p. 389, 1862.

Ab. ♂ 46–49; ♀ 48–52. H. w. ♂ 35–37; ♀ 38–40.

Antecub. f. w. 15–17; h. w. 10–12.

Postcub. f. w. 11–13; h. w. 11–14.

Face brown, sometimes slightly paler (greenish) at the sutures; edges of labrum and a more or less distinct small central spot, yellowish, its base greenish; frons above greenish, little or not interrupted in the middle by the brown of the basal half. Mesothoracic half-color interrupted; mid-dorsal carina black; dorsal stripes isolated; antehumeral stripe interrupted to form a spot above and a line below, on one side in one specimen and on both sides in another the two connected; a straight, parallel-sided pale area between the humeral and first lateral stripes; two lateral stripes, the enclosed pale area narrower than either and constricted or interrupted above. Abdomen with a much reduced maculose longitudinal mid-dorsal stripe. Legs black, paler basally, first femora brown beneath.

♂.—Accessory genitalia of 2 blackish; second hamule longer than in any other species of the group, simple, curved forwards, the apical third directed anteriorly; segments 7–9 slightly dilated, about as in *notatus* and *plagiatus:* sides of 8 and 9 greenish, with reddish tinges, the extreme edges black; 10 and the appendages black or very dark.

♀.—There is great variation in the development of the spine on either side between each lateral ocellus and the eye; it may be very distinct, or hardly discernable, though a thickening of the carina at that point is evident. In the same way the crest of the occiput varies in different specimens in a way that can hardly be explained by shrinkage in drying; it is emarginate at the center, and on either side of this may be a low uniformly convex edge, or it may be as shown in the drawing (plate viii). Abdomen more robust than in the male; 8 and 9 scarcely dilated, colored about as in the male, edge of 9 entirely pale; 3–7 with conspicuous lateral spots; vulvar lamina about one-twentieth as long as the sternum of 9.

Material Examined.

2 ♂, Ohio; 1 ♀, Akron, Ohio; September 26, 1897; J. S. Hine, collector. Ohio State University.

1 ♂, Ohio; J. S. Hine, collector. U. S. Nat. Mus.

1 ♂ (type of *Stylurus segregans* Needham), Quiver Creek, Havana, Illinois; June 23, 1896. Professor Needham.

1 ♀, Horton's Ford, Tennessee; August 14, 1899. C. C. Adams.

1 ♀, Clinch River P. O, Tennessee; Aug. 14, 1899. C. C. Adams.

1 ♂, 1 ♀, Allegheny River, Pittsburg, Pa.; July 4, 1899. E. B. Williamson.

1 ♂, Bethlehem, N. Y.; September 14, 1870; Lintner collection. M. C. Z.

1 ♂, Albany, N. Y. M. C. Z.

This species is also recorded for Massachusetts.

4. **Gomphus notatus** Rambur. Ins. Névr., p. 162, 1842.

Ab. ♂ 40–42; ♀ 41–43. H. w. ♂ 32–33; ♀ 33–34.

Antecub. f. w. 12–16; h. w. 10–12.

Postcub. f. w. 8–11; h. w. 7–10.

Face pale greenish brown (tenerals) to obscure brown; labrum greenish bordered with black and with a wide median stripe of the same color; anteclypeus dark, with the depressions of the postclypeus also dark (♂), or anteclypeus paler, only the slightly darker markings present (♀); front in frons dark reddish brown (♂), or the same color as the postclypeus (♀); above greenish, basal half reddish brown which is produced in the middle in front, usually interrupting the greenish area; eyes in life green above, gray below. Mesothoracic half-collar usually but not always narrowly interrupted at the middle; mid-dorsal carina black, or with the extreme edge yellowish; dorsal stripes isolated; antehumeral stripe slightly constricted above; humeral and two lateral sutures each with a complete dark stripe, the humeral the widest. Abdomen with a much reduced maculose longitudinal mid-dorsal stripe. Legs black, first femora paler beneath; in tenerals the femora are pale, darker apically and on the upper surface.

♂.—Accessory genitalia blackish; second hamule slender, simple, not turned forwards; coloration of last segments and dilation of 7–9 as in *spiniceps*.

♀.—In the form of the crest of the occiput and the variation in the development of the spine between each lateral ocellus and eye, the same that has been said for *spiniceps* holds here; two forms of occipital crests are figured. Abdominal segments 8 and 9 scarcely dilated, colored about as in *spiniceps;* vulvar lamina about one-twentieth as long as sternum of 9, or less.

In one male (Rock Island, Illinois; Walsh. M. C. Z.), doubtless studied by Hagen (Quatr. Add. Syn. Gomph., p. 61, or 466), the median longitudinal stripe of the labrum is represented by only a median spot. In this teneral specimen the whole face is pale, only frons above in front slightly darker, and lateral depressions of the postclypeus and margins of labrum, black. This description of labrum applies also to a female type of Walsh's *fluvialis* in the U. S. Nat. Mus. It is probably to be largely explained by the fading of these teneral specimens. The material from Ironton, Ohio, all teneral, does not so vary, however.

Material Examined.

3 ♂, 2 ♀, Ironton, Ohio; June 1, 1899. R. C. Osburn.

3 ♂, 3 ♀, Ironton, Ohio; June 1, 1899; J. S. Hine, collector. Ohio State University.

1 ♂, 1 ♀, Ironton, Ohio; June 1, 1899; R. C. Osburn, collector. E. B. Williamson.

2 ♂, 1 ♀, Cumberland River, Nashville, Tennessee; September 30, 1900. E. B. Williamson.

1 ♀, Niles, Michigan; June 21, 1894; Healy, collector. James Tough.

1 ♂, Illinois. C. C. Adams.

1 ♂, 2 ♀, Rock Island, Illinois; Walsh. M. C. Z.

1 ♂, 1 ♀, Rock Island, Illinois, "types" of *fluvialis;* last seven abdominal segments of ♀ gone. U. S. Nat. Mus.

This species is also reported from Quebec, Canada.

5. **Gomphus plagiatus** Selys. Syn. Gomph., p. 38 (or 57), 1854.

Ab. ♂. 44–46; ♀ 43–44. H. w. ♂ 34–36; ♀ 36–37.

Antecub. f. w. 13–14; h. w. 10–11.

Postcub. f. w. 9–11; h. w. 9–11.

Face in adults brown, greenish below, no very distinct markings; labrum largely green; frons above bluish green, brown at base; in young specimens the face is yellow; eyes in life grass-green above, below yellowish green. Mesothoracic half-collar scarcely or not interrupted; edge of mid-dorsal thoracic carina yellow; dorsal stripes normally isolated (in a male, Sandusky, Ohio, July 9, 1899, R. C. Osburn, collector, in my collection), the dorsal pale stripes widen below, and are continuous with the mesothoracic half-collar, and narrowly continuous above with the antehumeral pale areas; second lateral stripe interrupted near its upper end. In other respects, this unusual specimen is normal in coloration. In a few other specimens the dorsal stripes approach very nearly or are continuous, perhaps on only one side, with the half-collar. It may be noticed that in the case of *amnicola*, where the dorsal stripes are not entirely isolated above, they are continuous with the mid-dorsal area; the Sandusky specimen of *plagiatus*, on the other hand, has the dorsal stripes continuous with the antehumeral stripes); antehumeral pale stripes as wide as dorsal stripes, sometimes narrowed a little above; lateral stripes complete (note exception above in case of the Sandusky specimen), only in tenerals is the first one ever apparently incomplete. Abdomen brown or yellowish, a maculose longitudinal mid-dorsal stripe. Femora brown, darker apically; tibiæ and tarsi black; femora pale in tenerals.

♂.—Accessory genitalia brownish, usually pale; second hamule similar to *notatus* in shape and direction, but not so slender; 7–9 slightly dilated, about as in the two preceding species; 8–10 largely reddish yellow in color, the extreme edges of 8 and 9 black; appendages reddish brown, yellow in tenerals.

♀.—Abdominal colors usually indistinct; 8–10 reddish yellow, not so red as in the male, 9 usually the brightest; 8 and 9 very little dilated; vulvar lamina about one-eighth to one-ninth as long as the sternum of 9.

Material Examined.

1 ♂, Manamuskin, N. J.; September 3, 1900; Daecke, collector. Acad. Nat. Sci. Phila.

1 ♂, 1 ♀, vicinity of Philadelphia, Pa.; Philip Nell, collector. Dr. P. P. Calvert.

1 ♀, Fairmount Park, Pa. Dr. P. P. Calvert.

1 ♂, Morton, Pa.; July 17, 1886. Dr. P. P. Calvert.

2 ♀, Sandusky, Ohio; May 25, 1896. E. B. Williamson.

7 ♂, 6 ♀, Sandusky, O.; June 17, July 12, 1899. R. C. Osburn.

2 ♂, 4 ♀, Sandusky, O.; June 19, July 24, 1899; J. S. Hine, collector. Ohio State University.

3 ♂, 2 ♀, Sandusky, O.; July 9–10, 1896; R. C. Osburn, collector. E. B. Williamson.

1 ♂, Sandusky, O.; June 28, 1900; J. S. Hine, collector. Ohio State University.

1 ♂, 1 ♀, Winchester, Ill.; July 12, 1894; F. M. McElfresh, collector. C. C. Adams.

1 ♂, Bloomington, Ill.; June 29, 1895; M. J. Elrod, collector. C. C. Adams.

2 ♂, 1 ♀, Havana, Ill.; July 10–17, 1897. C. C. Adams.

1 ♂, Straw Plains, Tenn.; September 30, 1900. C. C. Adams.

2 ♂, Cumberland River, Nashville, Tenn.; September 19 and 30, 1900. E. B. Williamson.

1 ♂, Maryland; 1860; Uhler, collector. M. C. Z.

1 ♂, 1 ♀, Maryland; Hagen. M. C. Z.

1 ♂, Marshall Hall, Maryland; June 11, 1899; Wood, collector. U. S. Nat. Mus.

1 ♂, Bladensburg, Md.; September 10, 1897; H. Barber, collector. U. S. Nat. Mus.

1 ♂, Richmond, Va.; O. A. Stecker, collector. M. C. Z.

1 ♂, Washington, D. C.; September 27, 1896. U. S. Nat. Mus.

1 ♂, Florida. C. C. Adams.

1 ♂, Florida; Banks. U. S. Nat. Mus.

1 ♂, 1 ♀, Texas. Acad. Nat. Sci. Phila.

This species is also known from South Carolina.

SYNONYMIC NOTES.

Stylurus segregans Needham, Canadian Entomologist, Vol. xxix, No. 8, p. 185, 1897. A synonym of *spiniceps*.

Gomphus fluvialis Walsh, Proc. Acad. Phila., p. 394, 1862. As determined by Hagen and Selys (Quatr. Add. Syn. Gomph., pp. 60 and 61, or 465 and 466), this is a synonym of *notatus*. As detected by Hagen (*l. c.*), Walsh in describing his *fluvialis* had one female of *plagiatus*. It was from this female apparently that Walsh described the vulvar lamina of the species.

Gomphus elongatus Selys. Syn. Gomph., p. 39 (or 58), 1854. In Quatr. Add. Syn. Gomph., p. 60 (or 465), 1878, this species is announced as a synonym of *plagiatus*, and the previously expressed opinions of Selys and Hagen that it was *spiniceps* or *notatus* are corrected. Kirby (Syn. Cat.) places it again under *notatus*. It seems to be *plagiatus* for several reasons: color of face; form of occiput; the humeral stripe is not mentioned as being constricted above, as it plainly is in *notatus* and *spiniceps*, being normally interrupted in the latter; and the color of abdomen, as described in the Mon. Gomph., p. 161 (or 421), "the color of the abdomen is almost entirely obscure reddish," clearly indicates *plagiatus*, never being true, so far as I know for *notatus* or *spiniceps*.

Gomphus plagiatus Selys. In Selys' descriptions of this species in the Mon. Gomph., p. 159 (or 419), and the Syn. Gomph., p. 38 (or 57), the size is unusually small (ab. 40; h. w. 30), and the number of postcubitals (8) in front wings is smaller than in any specimen I have examined.

Gomphus olivaceous Selys. Trois. Add. Syn. Gomph., p. 21 (or 749), 1873. Hagen, Rept. U. S. Geol. Sur. Terr., p. 597, 1873. I have been unable to examine specimens of this species, which probably belongs in this subgenus. It is close to *plagiatus*, but is smaller, and Hagen considered them two species.

The Postanal Cells in the Genus Gomphus.

Professor Needham has kindly called my attention to the fact that the cells between the branches of the anal vein might offer a taxonomic character, and, with this idea in mind, in connection with the study of the subgenus *Stylurus*, I have studied specimens of twenty-six North American species and three European species of the genus *Gomphus*. I have examined the specimens above mentioned of *Stylurus*, the U. S. Nat. Mus. collection embracing 197 specimens in addition to the specimens of *Stylurus* above listed, twenty-one specimens of *G. fraternus, crassus and externus* kindly loaned me by Mr. Adams, and most of the specimens in my own collection—altogether I have tabulated under Figs. 1–6, plate viii, 822 wings. A few wings examined, because of their abnormal character, were not tabulated. With one or two exceptions, these abnormal wings belonged to *G. brevis*. Fig. 3*a*, pl. viii, is such a wing; it is the only case observed where the postanal cells continue to the margin of the wing as a single row.

Very rarely the first postanal cell is divided by a vein either at right angles to the length of the wing (see dotted line, fig. 1*c*, plate viii) or parallel to it, and extending from the first branch of the anal vein to the anal vein or to the vein separating the first and second postanal cells (see dotted lines, figs. 1*a* and 1*b*, plate viii). This crossing of the first postanal cell would seem to be as rare as the crossing of the triangle in this genus, and rarer than the misplacement of the second thickened antecubital from the fifth to the fourth or sixth.

Following is a list of the species examined with the number of wings of each species similar to figs. 1–6, plate viii.

EUROPEAN SPECIES.

1. *G. pulchellus*, fig. 1*a*, 2; fig. 1*c*, 4; fig. 3 (with *s. pa.* divided), 1; fig. 3, 1. Total 8.
2. *G. vulgatissimus*, fig. 2, 4. Total 4.
3. *G. simillimus*, fig. 3 (with *s. pa.* divided), 1; fig. 3, 3. Total 4.

NORTH AMERICAN SPECIES.

4. *G. pallidus*, fig. 1, 2. Total 2.
5. *G. exilis*, fig. 1*a*, 60; fig. 1*b*, 33; fig. 3 (with *s. pa.* divided), 7. Total 100.
6. *G. sordidus*, fig. 1*a*, 9; fig. 1*b*, 9; fig. 3 (with *sp. a.* divided), 4. Total 22.
7. *G. descriptus*, fig. 1a, 8; fig. 1b, 2; fig. 3 (with *s. pa.* divided), 4; fig. 3, 1. Total 15.
8. *G. spicatus*, fig. 1*a*, 19; fig. 1*b*, 13. Total 32.
9. *G. minutus*, fig. 1*a*, 4; fig. 1*b*, 3; fig. 3 (with *s. pa.* divided). 1. Total 8.
10. *G. quadricolor*, fig. 1*a*, 5; fig. 1*b*, 1; fig. 3 (with *s. pa.* divided), 1. Total 7.
11. *G. viridifrons*, fig. 1*b*, 5; fig. 3 (with *s. pa.* divided), 2; fig. 3, 1. Total 8.
12. *G. abbreviatus*, fig. 1*a*, 9; fig. 1*b*, 16; fig. 1*d*, 1. Total 26.
13. *G. brevis*, fig. 1*a*, 91; fig. 1*b*, 49; fig. 1*d*, 5; fig. 3 (with *s. pa.* divided), 7; fig. 3, 20; fig. 3*a*, 1. Total 173.
14. *G. graslinellus*, fig. 1*a*, 19; fig. 1*b*, 11; fig. 3, 1. Total 30.
15. *G. militaris*, fig. 1*b*, 2. Total 2.
16. *G. furcifer*, fig. 1*a*, 3; fig. 1*b*, 1. Total 4.
17. *G. villosipes*, fig. 4, 18; fig. 5, 6. Total 24.
18. *G. externus*, fig. 4, 4; fig. 5, 7. Total 11.
19. *G. crassus*, fig. 4, 11; fig. 5, 12. Total 23.
20. *G. fraternus*, fig. 4, 13; fig. 5, 42. Total 53.
21. *G. vastus*, fig. 4, 1; fig. 5, 31. Total 32.
22. *G. dilatatus*, fig. 5, 2. Total 2.
23. *G. amninola*, fig. 5, 12. Total 12.
24. *G. scudderi*, fig. 4, 4; fig. 5, 14. Total 18.
25. *G. spiniceps*, fig. 4, 6; fig. 5, 11. Total 17.
26. *G. notatus*, fig. 4, 4; fig. 5, 36. Total 40.
27. *G. plagiatus*, fig. 4, 12; fig. 5, 72. Total 84.
28. *G. parvulus*, fig. 6, 2. Total 2.
29. *G. albistylus*, fig. 6, 56. Total 56. In five cases the second postanal cell was divided.

These characters furnish the basis for the following key:

1. Second branch of anal vein not distinctly angulate where the vein between the first and second postanal cells meets it, if this vein meets it at all (Figs. 1-3*a*, pl viii, species 1-16 inclusive; not variable).
   1′. Second branch of anal vein not forming any of the boundary of the first postanal cell (Figs. 1-2, species 1 and 2, and 4 16 inclusive; variable).
      1″. Only first postanal cell not divided (Figs. 1-1*c*, species 1 and 4-16 inclusive; variable).
      2″. First and second postanal cells not divided (Figs. 1*d*, 2, not normal in any species studied; see species 12 and 13).
      3″. First, second and third postanal cells not divided (Fig. 2, species 2; not variable).
   2′. Second branch of anal vein forming part of the boundary of the first postanal cell (Figs. 3, 3*a*, species 3).
      1″. Only first postanal cell not divided (not normal in any species studied; see species 5-7, 9-11 and 13).
      2″. First and second postanal cells not divided (Fig. 3, species 3; variable).
2. Second branch of anal vein distinctly angulate where the vein between the first and second postanal cells invariably meets it (Figs. 4-6, species 17-29 inclusive; not variable).
   1′. Portion (*s. e.*) of anal vein bounding first postanal cell longer than the portion (*i. e*) of the second branch of the anal vein bounding the same cell (Figs. 4-5*a*, species 17-27 inclusive; not variable).
      1″. Second postanal cell divided (Figs. 4-4*a*, species 17; variable).
      2″. Second postanal cell open (Figs. 5-5*a*, 18-27 inclusive; variable).
   2′. Portion of anal vein bounding first postanal cell shorter than the portion of the second branch of the anal vein bounding the same cell (Fig. 6, species 28 and 29; not variable).

On the basis of the ratio of the number of wings like figs. 1 and 1*a*, plate viii, to the number like figs 1*b* and 1*c*, species 1, and 4-16 are arranged as follows: *pallidus*, 2-0; *quadricolor*, 5-1; *descriptus*, 8-2; *furcifer*, 3-1; *exilis*, 60-33; *brevis*, 91-49; *graslinellus*, 19-11; *spicatus*, 19-13; *minutus*, 4-3; *sordidus*, 9-9; *abbreviatus*, 9-16; *pulchellus*, 2-4; *militaris*, 0-2; *viridifrons*, 0-5.

On the basis of the ratio of the number of wings like fig. 1 (and 1*a*, 1*b*, 1*c* and 1*d*), plate viii, to the number like fig. 3 (with *s. pa.* divided or not divided), species 1, and 4-16 are arranged as follows: *spicatus* 32-0; *abbreviatus*, 26-0; *furcifer*, 4-0; *militaris*, 2-0; *pallidus*, 2-0; *graslinellus*, 30-1; *exilis*, 93-7; *minutus*, 7-1; *quadricolor*, 6-1; *brevis*, 145-28; *sordidus*, 18-4; *pulchellus*, 6-2; *descriptus*, 10-5; *viridifrons*, 5-3.

On the basis of the ratio of the number of wings like fig. 3, plate viii (with *s. pa.* divided), to the number like fig. 3 (with *s. pa.* not divided), species are arranged as follows: *exilis*, 7-0; *sordidus*, 4-0;

minutus, 1–0; *quadricolor*, 1–0; *descriptus*, 4–1; *viridifrons*, 2–1; *pulchellus*, 1–1; *brevis*, 7–21; *graslinellus*, 0–1.

On the basis of the ratio of the number of wings like fig. 4 (or 4*a*), plate viii, to the number like fig. 5 (or 5*a*), species 17–27; inclusive are arranged as follows: *villosipes*, 18–6; *crassus*, 11–12; *externus*, 4–7; *spiniceps*, 6–11; *fraternus*, 13–42; *scudderi*, 4–14; *plagiatus*, 12–72; *notatus*, 4–36; *vastus*, 1–31; *dilatatus*, 0–2; *amnicola*, 0–12.

EXPLANATION OF PLATE VIII.

Figs. 1–6.—Postanal cells of left hind wings of: 1, *G. furcifer*; 1*a*, *G. pulchellus*; 1*b*, *G spicatus*; 1*c*, *G. pulchellus*; 1*d*, *G. brevis*; 2, *G. vulgatissimus*; 3, *G. similimus*; 3*a*, *G. brevis*; 4, *G. villosipes*; 4*a*, *G. crassus*; 5, *G. fraternus*; 5*a*, *G. plagiatus*; 6. *G. albistylus*; *f.* - - - *f*, first branch of anal vein; s. - - - *s*, second branch of anal vein; *s'*, point where vein separating the first and second postanal cells meets the second branch of the anal vein; *f. pa.* first postanal cell; *s. pa.* second postanal cell; *s. e.* portion of anal vein bounding first postanal cell; *i. e.* portion of second branch of anal vein bounding first postanal cell.

Figs. 7 and 8.—*Gomphus amnicola* Walsh. Rock Island, Illinois, Type 1010, U. S. Nat. Mus. Right second hamule, profile (7) and posterio-latero-interaal (8) views.

Fig. 9.—Dorsal view of the male abdominal appendages of *Gomphus notatus* Rambur. Ironton, Ohio, June 1, 1899. R. C. Osburn.

Fig. 10.—Same of *Gomphus plagiatus* Selys. Sandusky, Ohio, July 6, 1899; R. C. Osburn, collector. E. B. Williamson.

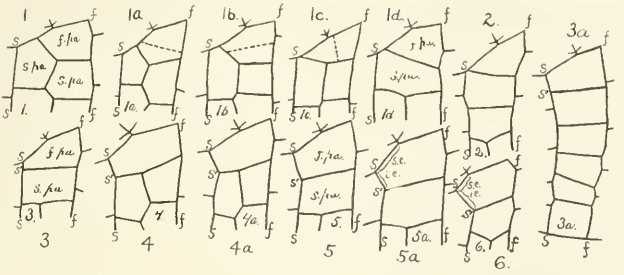
Fig, 11.—Same of *Gomphus amnicola* Walsh. Bethlehem, N. Y., July 6, 1870; Lintner collection. M. C. Z.

Fig. 12. –Same of *Gomphus scudderi* Selys. Russell Stream, Northeast Carry, Maine, August 29, 1899; F. L. Harvey, collector. E. B. Williamson.

Fig. 13.—Same of *Gomphus spiniceps* Walsh. Ohio; J. S. Hine, collector. U. S. Nat. Mus.

Fig. 14.—Occipital crest of female of *Gomphus notatus* Rambur. One of the types of *G. fluvialis* Walsh. Rock Island, Illinois, Type 1009, U. S. Nat. Mus.

Fig. 15.—Same of *Gomphus plagiatus* Selys. Sandusky, Ohio, July 10, 1899. R. C. Osburn.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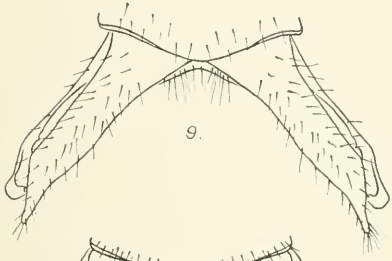
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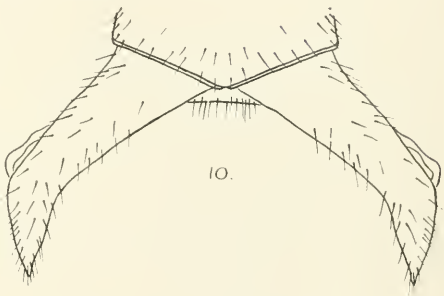
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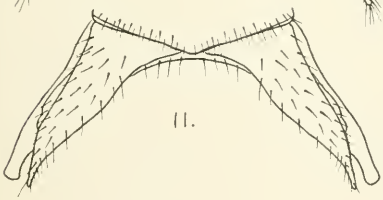
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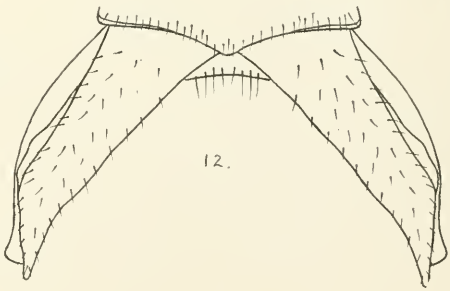
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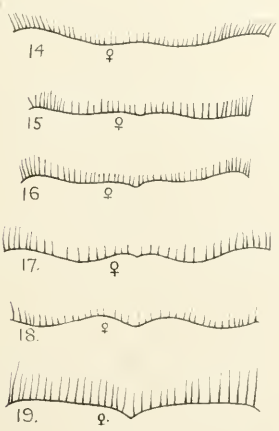
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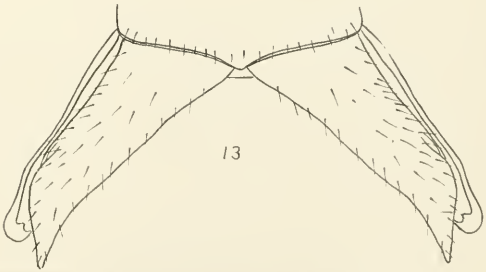
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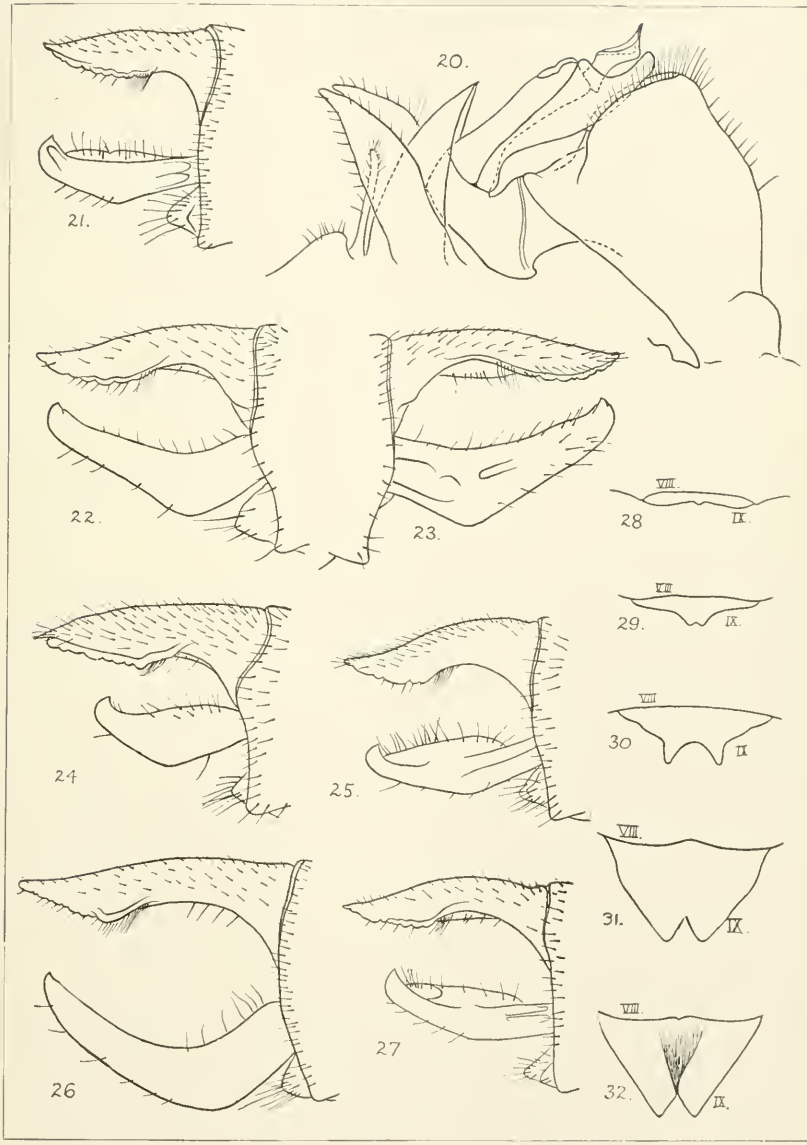
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Fig. 16.—Same of *Gomphus amnicola* Walsh. Rock Island, Illinois, Type 1010, U. S. Nat. Mus.

Fig. 17.—Same of *Gomphus notatus* Rambur. Cumberland River, Nashville, Tenn., September 30, 1900. E. B. Williamson.

Fig. 18.—Same of *Gomphus spiniceps* Walsh. Akron, Ohio, September 26, 1897; J. S. Hine, collector. Ohio State University.

Fig. 19.—Same of *Gomphus scudderi* Selys. Northeast Carry, Maine, August 29, 1899; F. L. Harvey, collector. Ohio State University.

EXPLANATION OF PLATE IX.

Fig. 20.—*Gomphus plagiatus* Selys. Accessory genitalia of second abdominal segment of male in detail. Right side, seen in profile. The penus is partly withdrawn from its sheath.

Fig. 21.—Profile view of the male abdominal appendages of *Gomphus amnicola* Walsh. Galina, Illinois; Bean, collector. M. C. Z.

Fig. 22.—Same of *Gomphus spiniceps* Walsh. Same as Fig. 12.

Fig. 23.—Same of *Gomphus spiniceps* Walsh. Quiver Creek, Havana, Illinois, June 23, 1896 (type of *Stylurus segregans* Needham); Needham and Hart, collectors. Professor Needham.

Fig. 24.—Same of *Gomphus plagiatus* Selys. Same as Fig. 14.

Fig. 25.—Same of *Gomphus notatus* Rambur. Same as Fig. 13.

Fig. 26.—Same of *Gomphus scudderi* Selys. Same as Fig. 11.

Fig. 27.—Same of *Gomphus notatus* Rambur. One of the types of *G. fluvialis* Walsh; Rock Island, Illinois. Type 1009, U. S. Nat. Mus.

Fig. 28.—Vulvar lamina of *Gomphus notatus* Rambur. Same as Fig. 25.

Fig. 29.—Same of *Gomphus spiniceps* Walsh. Same as Fig. 24.

Fig. 30.—Same of *Gomphus plagiatus* Selys. Same as Fig. 27.

Fig. 31.—Same of *Gomphus amnicola* Walsh. Rock Island, Illinois. M. C. Z.

Fig. 32.—Same of *Gomphus scudderi* Selys. Same as Fig. 23.

REMARKS ON SOME MEXICAN ORTHOPTERA, WITH DESCRIPTIONS OF NEW SPECIES.

BY JAMES A. G. REHN.

The specimens—the study of which forms the present paper—were collected by Mr. Otis W. Barrett, formerly of Tacubaya, Mexico. A former collection made by him was published on previously (Trans. Am. Ent. Soc., xxvii, pp. 85-99). The types of the species described as new are in the possession of the writer. The use of the family name Tettigonidæ in place of the time honored Locustidæ is in accordance with the proper relations of the Linnaean genus *Locusta*, for a discussion of which see a recent paper by the writer (Canad. Ent., xxxiii, pp. 118-121).

Localities represented are as follows: Orizaba, Jalapa, Teocelo, Presidio and Xico in Vera Cruz; Tacubaya, Tizapan and Eslava in Distrito Federal (D. F.); Cuernavaca, Nepantla and Yantepec in Morelos. A note on the genus *Neobarrettia* will be found at the end of the paper.

Family FORFICULIDÆ.

Sparatta dentifera n. sp.

Type: one male; Orizaba, Vera Cruz, June 6, 1899.

This specimen resembles *S. columbiana* DeBormans (Ann. Soc. Ent Belg., xxvii, p. 66, pl. 2, fig. 7) in color, but differs in the form of the anal segment and forceps. The description of *S. bormansi* Kirby (Journ. Linn. Soc. London, Zool., xxv, p. 528) is so poor and insufficient that comparison with it is almost impossible. The antennæ of *bormansi* are described as having the two basal joints blackish, the others brown, while in the specimen before me the three basal segments (all that are present) are blackish brown. The form of the forceps is so distinctive that had *bormansi* possessed the same, it seems hardly likely that Kirby would not have mentioned them.

Size small. Head coarsely punctate, posteriorly with a triangular emargination. Pronotum slightly longer than broad, central portion somewhat produced anteriorly, posterior margin broadly rounded, the whole somewhat depressed centrally and punctate posteriorly, medium carina undeveloped and indistinct anteriorly. Elytra and wings scabrous, the anterior and posterior angles rounded,

the latter broadly. Anal segment with four parallel rows of punctures, the posterior margin truncate, except for the pygidium which is transverse, with the margin truncate. Forceps moderately long, parallel, the apex strongly incurved, the base of the internal margin bearing on the inferior surface a lamellate extension which terminates in a heavy tooth, the superior-internal margin bears centrally a tooth much smaller than the one before mentioned, the inferior margin from this point bearing a narrow lamellate edge.

General color black, the anal segment and forceps reddish brown, the latter much the darker. Basal joints of the antennæ blackish brown. Limbs and lower surface dull reddish brown.

Measurements:

Length of body	6.75 mm.
Length of forceps	2.50 "
Length of pronotum	1.25 "
Length of elytra and wings	3.00 "

Ancistrogaster luctuosus Stal.

1855, *Ancistrogaster luctuosus* Stal, Ofv. Vet.-Akad. Förh., xii, p. 349.

Four specimens, females; Jalapa, Vera Cruz, viii, and Teocelo, Vera Cruz, viii.

This species has never before been recorded north of Las Mercedes, Guatemala.

Ancistrogaster tolteeus (Scudder)

1876, *Forficula tolteca* Scudder, Proc. Bost. Soc. Nat. Hist., xviii, p. 361.

One specimen ♂; Orizaba, Vera Cruz, June 6, 1899.

Ancistrogaster sp. ?

One specimen, ♀; Cuernavaca, Morelos, vi.

This specimen is unfortunately headless, and apparently cannot be placed under any of the known species of the genus. The absence of the head and antennæ, which are very important, makes it difficult to arrive at any satisfactory conclusions.

Apterygida tæniata (Dohrn).

1862, *Forficula tæniata* Dohrn, Stett. Ent. Zeit., xxiii, p. 230.

Nineteen specimens, 8 males, 11 females; Orizaba, Vera Cruz, June 6, 1899 (2), Jalapa, Vera Cruz, viii (12), Teocelo, Vera Cruz, viii (3), Cuernavaca, Morelos, vi (2).

Family BLATTIDÆ.

Thyrsocera cincta Burmeister.

1838, *Thyrsocera cincta* Burmeister, Handb. d. Ent., Bd. ii, Abth. ii, pt. i p. 499.

Three specimens, males; Orizaba, Vera Cruz, June, 6, 1899.

Thyrsocera discoidalis (Burmeister).

1838, *Blatta discoidalis* Burmeister, Handb. d. Ent., Bd. ii, Abth. ii, pt. i, p. 498.

One specimen, female; Orizaba, Vera Cruz, June 6, 1899.

This name is usually quoted as *discicollis*, but an examination of Burmeister's work will show that the original is *discoidalis*.

Periplaneta americana colorata n. subsp.

Periplaneta americana var. Saussure, Miss. Scient. Mex., Orthoptera, p. 72; Saussure and Zehntner, Biol. Cent. Amer., Orthoptera, p. 74.

Type: male; Cuernavaca, Morelos, vi.

This deeply colored form of *P. americana* was known to a number of writers, who never applied a distinctive name to it. It differs from the typical *americana* in the much deeper and richer colors, in this very much resembling *P. australasiæ* as Saussure and Zehntner have pointed out (Biol. Cent. Amer., Orth., p. 74). Any confusion with *P. australasiæ* is prevented by the form of the supra anal plate.

General color deep burnt sienna (Ridgway's Nomenclature of Colors), the elytra becoming orange-ochraceous toward the tips, the whole with a purplish iridescence. Pronotum burnt umber, posteriorly with a collar of ochre, the posterior margin black. Lower surface much paler. Antennæ dark brown.

Measurements:

Length of body	26.6 mm.
Length of pronotum	8.0 "
Length of elytra	23.25 "
Breadth of elytra	8.0 "

A specimen in my collection, from Philadelphia, approaches this form, but has the straw-yellow on the pronotum unclouded and distinct.

Homœogamia mexicana Burmeister.

1838, *Homœogamia mexicana* Burmeister, Handb. d. Ent., Bd. ii, Abth. ii, pt. i, p. 490.

One specimen, ♂, Jalapa, Vera Cruz, viii.

Family MANTIDÆ.

Stagmomantis limbata (Hahn).

1835, *Mantis limbata* Hahn, Icones ad Mon. Cimic., i. t. A, fig. 2.

Four specimens, two males, two females; Cuernavaca, Morelos, vi.

Theoclytes chlorophæa (Blanchard).

1835, *Mantis chlorophæa* Blanchard, Mag. Zool., pl. 135.

One specimen, ♂; Teocelo, Vera Cruz, viii.

Vates annectens Rehn.

1900, *Vates annectens* Rehn, Trans. Am. Ent. Soc., xxvii, p. 85.

One specimen, ♂; Tacubaya, D. F., November 11, 1898.

Vates sp.

One specimen, ♀ (immature); Cuernavaca, Morelos, v.

This very interesting specimen is unfortunately immature; the arrangement and form of the foliaceous lobes are apparently much different from those of any known species of the genus. While somewhat resembling *V. pectinata*, it is clearly not the same, none of the lobes being angular to the extent they are in that species. The supra-coxal lobes are distinctly concave on their anterior margin. The information with the specimen is to the effect that it was eating a *Morpho* when captured.

Family GRYLLIDÆ.

Gryllus assimilis Fabricius.

1775, *Gryllus assimilis* Fabricius, Syst. Ent., p. 280.

Two specimens, ♂ and ♀; Jalapa, Vera Cruz, viii.

Gryllus barretti n. sp.

Types: one male, three females; Cuernavaca, Morelos, v and vi.

This interesting species closely resembles *G. assimilis*, but is smaller and the oblique veins in the male number three. The ovipositor is proportionately longer than in *assimilis*. The color of the lateral field and the angle causes it to resemble *capitatus* from South America, but that species possesses 5 6 oblique veins. I take pleasure in dedicating this species to my friend, Mr. Otis W. Barrett who collected the types.

♂.—Size medium. Head glabrous, except the posterior half of genæ; eye rather ovate, with no marked angles; antennæ reaching the tip of the caudate wings. Pronotum rather hirsute, this character most marked on the posterior margin, which is very broadly rounded, the anterior slightly concave; lateral lobes of greater depth anteriorly than posteriorly, the anterior angle narrowly rounded. The dorsal field of tegmina with three oblique veins. Wings caudate, extending beyond the tegmina to the length of the hind tibiæ. Limbs clothed with two sorts of hairs, one long and hirsute, the other short and pubescent; auditory organ of anterior tibiæ elliptical; posterior tibiæ with six spines in each border, the apical spines fairly long.

General color brownish black, the black pure on the head and pronotum. Tegmina with the branches of the mediastine vein yellowish. Limbs wood brown, covered with a faint silvery pubescence.

♀.—Similar to the male, except for the following particulars:—Head pilose as far forward as the centre of the eyes. Pronotum entirely hirsute. Ovipositor longer than head and body together. Lateral field of the tegmina below the mediastine vein pale brownish yellow hyaline, the discoidal region striped with the same color.

Measurements:	♂	♀
Length of body	21.5 mm.	17. mm
Length of pronotum	5. "	4.75 "
Breadth of pronotum	7. "	6. "
Length of tegmina	14. "	12.5 "
Length of hind femora	12.5 "	12. "
Length of ovipositor	—— "	15. "

Œcanthus niveus (De Geer).

1773, *Gryllus niveus* De Geer, Mém. Ins., iii, p. 522, 6, t. 43, fig. 6.

Four specimens, females; Cuernavaca, Morelos, vi.

Family TETTIGONIDÆ.

Stenopelmatus talpa Burmeister.

1838, *Stenopelmatus talpa* Burmeister, Handb. d. Ent., Bd. ii, Abth. ii, pt i, p. 721.

One specimen, ♀; Tacubaya, D. F., vi.

Scudderia mexicana (Saussure).

1861, *Phaneroptera mexicana* Saussure, Rev. et Mag. d. Zool. (2), xiii, p. 129.

Four specimens, one male, three females; Cuernavaca, Morelos, vi.

Scudderia ungulata Scudder.

1898, *Scudderia ungulata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiii, p. 280.

One specimen, ♀; Orizaba, Vera Cruz, June 6, 1899.

This specimen is rather doubtfully assigned to this species, as it does not fully agree with Scudder's description, but the uncertainty which attends the determination of females of this genus causes me to place it here. If a described form, it certainly is either *ungulata* or *paronæ;* the female of the latter being unknown, comparison therefore is impossible.

Symmetropleura teocelæ n. sp.

Type: ♀; Teocelo, Vera Cruz, viii.

Apparently this specimen is closest allied to *S. lævicauda*, the median vein being confluent with the ulnar vein, but the form of the tegmina resembles *modesta*.

Size about the same as *S. modesta*. Vertex deeply sulcate with erect lateral margins, strongly constricted centrally, narrowly separated from the front. Eyes prominent, semi-globular. Pronotum compressed, subequal, anterior margin very feebly concave, posterior margin roundly truncate, centrally shallowly sulcate; lateral lobes little longer than deep, the posterior sinus deeply cut, inferior margin broadly rounded, with the anterior angle rather prominent, the anterior margin subsinuate. Tegmina long, but little wider than the length of the pronotum, margins subequal; the median vein arising from the discoidal before the middle, and reaching the ulnar vein. Wings longer than the elytra, apex anteriorly rounded. Anterior and median femora slender, with obscure spines: the tibiæ bearing two rows of spines. Posterior femora slender, with few spines; tibiæ closely spined, the apex with a distinct anterior curve. Anal segment triangularly produced between the cerci, the latter tapering, slightly incurved, the apex thickened; subgenital plate moderately produced, bicarinate, and apparently apically truncate (the specimen being distorted).

General color pale green, strongest in the vicinity of the ulnar vein; lower portion of the lateral lobes of the pronotum very pale, almost whitish; the dorsal field of the tegmina with a spot of blackish brown, the space between the anal and ulnar veins being the same color.

Measurements:

Length of body	14.	mm.
Length of pronotum	4.	"
Length of tegmina	27.	"
Breadth of tegmina	5.25	"
Length of posterior femora	16.5	"

Phylloptera annulata n. sp.

Type: ♂; Presidio, Vera Cruz, vi.

Evidently allied to *P. maculosa* Burmeister from Bahia, but differing in the number of spots on the tegmina, and the absence of heavy purplish coloring on the pronotum. The only other species with which it might possibly be confounded is *P. finoti* Griffini from Panama, which has, besides other differentiations, black denticules on the cerci,

Size medium. Head with the vertex broadly sulcate, the lateral margins moderately elevated, contingent with the front, the latter not sulcate, but with a double row of punctures; eyes elliptical much shorter than the infra-ocular genæ; antennæ surpassing the tegmina. Pronotum with the disk flat, considerably expanding posteriorly, the anterior margin concave, the posterior broadly rounded, with a slight central emargination; lateral lobes inserted at right angles to the disk, deeper than wide, the lower margin subsinuate anteriorly, the posterior sinus moderately deep. Tegmina elongate-ovate, tip rather narrowly rounded. Wings extending beyond the tegmina. Anterior femora above smooth, below with four spines; tibiæ sulcate superiorly and inferiorly, two spines on the posterior-superior margin, the inferior margins each bearing eight spines. Median femora inferiorly with four rather obsolete spines. Posterior femora inferiorly with five spines on the external margin, internal with seven; tibiæ

strongly quadrate, superiorly with fourteen spines, inferiorly with twenty-six. Supra-anal plate broad, apex broadly rounded, shallowly sulcate. Cerci with the tips sharply bent inward. Subgenital plate bicarinate, centrally tumid, style sheath extended.

General color approaching gallstone yellow (Ridgway's Nomenclature of Colors), completely sprinkled with blotches and dots of dark maroon-purple, these being grouped into an irregular stripe on the ulnar vein, and forming rings encircling scattered spots of yellowish white on the tegmina, the margin of the lateral lobes of the pronotum being corded with the same. The femora are darker than the general tint, the spines black; the tibiæ are decidedly blackish, the anterior pair with two dusky spots, the auditory organ being milky white. Antennæ with pale yellow annulations.

Measurements:

Length of body	20.25 mm.
Length of pronotum	5.5 "
Length of tegmina	36. "
Width of tegmina	19. "
Length of hind femora	23.5 "
Length of hind tibiæ	25.5 "

Petaloptera zendala Saussure.

1859, *Petaloptera zendala* Saussure, Rev. et Mag. d. Zool. (2), xi, p. 205.

One specimen, ♂; Cuernavaca, Morelos, vi.

Petaloptera filia Brunner.

1878, *Petaloptera filia* Brunner, Monogr. d. Phaneropteridea, p. 346.

One specimen, ♀; Cuernavaca, Morelos, vi.

Syntechna caudelli n. sp.

Type: ♀; Orizaba, Vera Cruz, vi.

The specimen on which this species is based differs rather decidedly from both of the previously known species—*olivaceo viridis* and *tarasca*. It departs from *olivaceo-viridis* in the non-sulcate anterior tibiæ and the different shaped tegmina. From *tarasca* it differs in the broadly rotundate lower margin of the lateral lobes of the pronotum, the non-sulcate anterior tibiæ and the rather concave disk of the pronotum. Specimens of *tarasca* have been recorded from the same locality (Biol. Cent. Amer., Orth., p. 366). This species is dedicated to my friend, Mr. A. N. Caudell of Washington, D. C., a student of the Orthoptera.

Size medium. Head with occiput punctate, the punctures resolving into lines diverging from the centre; vertex narrowly sulcate, contingent with the front; antennæ moderately long, almost reaching the tip of the hind femora; eyes globose, half as deep as the infra-ocular genæ. Pronotum with the disk rather concave, the anterior margin shallowly emarginate, the posterior broadly rounded; lateral lobes very much deeper than broad, the posterior sinus shallow,

inferior margin rounded. Tegmina three times as long as wide. the bend from the dorsal field being rather sharp, the tip narrowly rounded; median vein forking but once, the superior division reaching the ulnar vein, the inferior the posterior margin. Wings acuminate, extending beyond the tegmina by the length of the pronotum. Anterior tibiæ smooth, not sulcate. Posterior femora bearing eight spines; tibiæ quadrate, bearing eleven spines on the superior surface and eighteen on the inferior. Ovipositor short, sharply bent; subgenital plate acuminate, with two carinæ, which converge and form one posteriorly.

Ground color Paris green (Ridgway's Nomenclature), palest inferiorly, and on the limbs. Median and discoidal veins of tegmina partly outline in pale greenish; between the discoidal and main median vein a ring of blackish brown is situated, smaller ones similar to it being placed at the apex and below the humeral vein. Autennæ yellowish brown, greenish at the base.

Measurements:

Length of body	33.	mm.
Length of pronotum	7.1	"
Length of tegmina	47.	"
Width of tegmina	15.25	"
Length of hind femora	23.	"
Length of hind tibiæ	24.5	"
Length of ovipositor	4.75	"

Stilpnochlora marginella (Serville).

1839, *Phylloptera marginella* Serville, Orthopteres, p. 405.

Four specimens, males; Cuernavaca, Morelos, vi.

Stilpnochlora tolteca (Saussure).

1859, *Phylloptera tolteca* Saussure, Rev. et Mag. d. Zool. (2), xi, p. 203.

Three specimens, two males and one female; Teocelo, Vera Cruz, viii (2), and Cuernavaca, Morelos, vi (1).

Stilpnochlora azteca (Saussure).

1859, *Phylloptera azteca* Saussure, Rev. et Mag. d. Zool. (2), xi, p. 203.

Seven specimens, three males and four females; Teocelo, Vera Cruz, viii (3), Jalapa, Vera Cruz, vi (2), and Cuernavaca, Morelos, vi (2).

Pyrgocorypha sallei (Saussure).

1859, *Conocephalus sallei* Saussure, Rev. et Mag. d. Zool. (2), xi, p. 207.

Two specimens, ♂ and ♀; Teocelo, Vera Cruz, and Jalapa, Vera Cruz, viii.

Pyrgocorypha uncinata (Harris).

1842, *Conocephalus uncinatus* Harris, Inj. Ins. New Eng., p. 132.

One specimen, ♀; Orizaba, Vera Cruz, vi.

Pyrgocorypha hamata (Scudder).

1879, *Conocephalus hamatus* Scudder, Proc. Bost. Soc. Nat. Hist., xx, p. 87.

Eighteen specimens, one male, seventeen females; Cuernavaca, Morelos v, vi.

This series exhibits both the brown and green phase of coloration.

Conocephalus macropterus Redtenbacher.

1891, *Conocephalus macropterus* Redtenbacher, Verhandl. Zool.-Botan. Ver., xli, p. 402.

Nine specimens, two males and seven females; Orizaba, Vera Cruz, vi; Jalapa, Vera Cruz, vi and viii; Teocelo, Vera Cruz, viii, and Cuernavaca, Morelos, v.

Conocephalus hebes Scudder.

1879, *Conocephalus hebes* Scudder, Proc. Bost. Soc. Nat. Hist., xx, p. 92

Three specimens, two males, one female; Orizaba, Vera Cruz, vi; Jalapa, Vera Cruz, viii, and Tacubaya, D. F., vi.

The male from Orizaba is considerably smaller than the other, but it seems to agree in all important details.

Xiphidium ictum Scudder.

1875, *Xiphidium ictum* Scudder, Proc. Bost. Soc. Nat. Hist., xvii, p. 461.

Three specimens, females; Teocelo, Vera Cruz, viii; Xico, Vera Cruz, viii, and Jalapa, Vera Cruz, viii.

Gongrocnemis incerta Brunner.

1895, *Gongrocnemis incerta* Brunner, Monogr. der Pseudophyll., p. 167.

One specimen, immature ♂; Jalapa, Vera Cruz, viii.

This specimen differs slightly from Brunner's types in possessing eight spines on the posterior femora instead of five or six.

Family ACRIDIDÆ.

Truxalis brevicornis (Linnæus).

1763, *Gryllus brevicornis* Linnæus, Amœn Acad., vi, p. 398.

One specimen, ♂; Xico, Vera Cruz, viii.

Syrbula valida Rehn.

1900, *Syrbula valida* Rehn, Trans. Amer. Ent. Soc., xxvii, p. 91.

One specimen, ♂; Cuernavaca, Morelos, xi.

Machærocera sumichrasti Thomas.

1874, *Machærocera sumichrasti* Thomas, Bull. U. S. Geol. and Geog. Surv. Terr. (1st Ser.), No. 2, p. 70.

Two males; Xico, Vera Cruz, viii.

Plectrotettix viatorius (Saussure).

1861, *Stenobothrus viatorius* Saussure, Rev. et Mag. de Zool. (2), xii, p. 317.

Four females; Cuernavaca, Morelos, vi.

Sphenarium borrei Bolivar?

1884, *Sphenarium borrei* Bolivar, Ann. Soc. Esp. Nat. Hist., xiii, cuad. 3, p. 445.

Three females; Nepantla, Morelos, xi, and Jalapa, Vera Cruz, viii.

It is quite possible that these specimens represent two species, and that true *borrei* is not represented in them, but with the small amount of material I have referred here with a query.

Sphenarium purpurasceus Charpentier.

1845, *Sphenarium purpurasceus* Charpentier, Orth. descr. et dep., pl. 31, f. 1–8.

Five specimens, four males, one female; Jalapa, Vera Cruz, viii, Eslava, D. F., and Nepantha, Morelos, xi.

Arphia nietana (Saussure).

1861, *Tomonotus nietanus* Saussure, Rev. et Mag. de Zool. (2), xiii, p. 321.

Two females; Eslava, D. F.

Lactista punctatus (Stal).

1873, *Œdipoda punctatus* Stal, Recensio Orthopterorum, i, p. 130.

Two specimens, ♂ and ♀; Presidio, Vera Cruz, vi.

Trimerotropis fasciculа McNeill.

1900, *Trimerotropis fasciculа* McNeill, Psyche, viii, p. 31; Proc. U. S. Nat. Mus., xxiii, p. 425. 1901.

—— *Trimerotropis monticola* Rehn (nec Saussure), Trans. Amer. Ent. Soc., xxvii, p. 97. 1900.

Ten specimens, 4 males, 6 females; Cuernavaca, Morelos, vi; Tacubaya, D. F., xi, 25 (1), and Tizapan, D. F., viii (1).

Though this species was described from New Mexico (and Arizona?), it seems to occur plentifully in central Mexico. McNeill has made the statement that this species may not be distinct from his *bruneri*, and, as far as the median carina of the vertex goes as a differential character, I have specimens which show a fairly well marked median carina. Both varieties mentioned by McNeill occur in the collection, the posterior angle of the pronotum being obtuse-angulate in some representatives before me.

Heliastus sumichrasti (Saussure).

1861, *Œdipoda sumichrasti* Saussure, Rev. et Mag. de Zool. (2), xiii, p. 324.

—— *Lactista inermus* Rehn, Trans. Amer. Ent. Soc., xxvii, p. 97. 1900.

Three specimens, all males; Cuernavace, Morelos, vi.

Tæniopoda centuris (Drury).

1773, *Gryllus centurio* Drury, Ill. Nat. Hist., ii, p. 78, pl. xli, fig. 3.

Eighteen specimens, 11 males, 7 females (one immature), Jalapa, Vera Cruz, viii.

These specimens vary greatly in regard to the coloration, some having a dusky suffusion covering the pattern of the tegmina.

Schiitocerca vaga (Scudder).

1876, *Acridium vagum* Scudder, Proc. Bost. Soc. Nat. Hist., xviii, p. 269.

Five specimens, 2 males, 3 females; Tacubaya, D. F., xi, 25.

Schistocerca pyramidata Scudder.*

1899, *Schistocerca pyramidata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiv, p. 454.

Three specimens, 1 male, 2 females; Cuernavaca, Morelos, v, vi and 11 11-98.

Schistocerca sonorensis Scudder.

1899, *Schistocerca sonorensis* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiv, p. 463.

One specimen, ♀; Cuernavaca, Morelos, v.

This specimen is placed under this species with some uncertainty, though the alternative is *rubiginosa*, with which it does not agree in several particulars.

Schistocerca americana (Drury).

1770, *Gryllus americanus* Drury, Ill. Nat. Hist., i, p. 128, pl. 49, fig. 2.

Two females; Cuernavaca, Morelos, vi.

Aidemona azteca (Saussure).

1861, *Platyphyma azteca* Saussure, Revue et Mag. de Zool. (2), xiii, p. 161.

Five specimens, one male, four females; Cuernavaca, Morelos, vi (3), Nepantla, Morelos, xi (1), and Xico, Vera Cruz, viii (1).

Melanoplus corpulentus Scudder.

1899, *Melanoplus corpulentus* Scudder, Proc. U. S. Nat. Mus., xx, p. 313.

One specimen, ♂; Tacubaya, D. F., 25, xi.

Melanoplus arizonæ Scudder.

1879, *Melanoplus arizonæ* Scudder, Proc. Bost. Soc. Nat. Hist., xx, p. 64.

One female; Cuernavaca, Morelos, vi.

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* The specimen from Rio Cocula, Guerrero, previously determined by the writer as *S. pyramidata* (Trans. Am. Ent. Soc., xxvii, p. 97), proves on more recent examination to be *Schistocerca camerata* Scudder (Proc. Amer Acad. Arts and Sci., xxxiv, p. 451), which was originally described from Sinaloa.

The discovery of a specimen of this little known species came as a great surprise. The identity of the specimen as this species is beyond doubt, the characters agreeing in every particular. The color of the hind tibiæ, which Scudder supposed was red, is glaucous strongest centrally.

Paratettix schochii Bolivar.

1887, *Paratettix schochii* Bolivar, Ann. Soc. Eng. Belg., xxxi, p. 274.

Six specimens, 2 males, 4 females; Yantepec, Morelos, 17, xi.

Telmatettix aztecus (Saussure).

1861, *Tettix aztecus* Saussure, Rev. et Mag. de Zool. (2), xiii, p. 400.

One female; Yantepec, Morelos, 17, xi.

Tettigidea chichimeca (Saussure).

1861, *Tettix chichimeca* Saussure, Rev. et Mag. de Zool. (2), xiii, p. 400.

One female; Cuernavaca, Morelos, vi.

Tettigidea sp.

One male; Eslava, D. F.

Note on the Genus *Neobarrettia*.

The genus *Neobarrettia* was recently described (Ent. News, xii, p. 6) by the writer from three specimens collected by Mr. Barrett at Rio Cocula, Guerrero, Mexico.

Mr. Barrett has very kindly volunteered some notes on the insect in life. He writes as follows: "The locality where the specimens were taken is the least known corner of Mexico—hilly, with dried-up vegetation during about one-half of the year. The species seems to be cupuscular in habits; it was almost impossible to find a specimen during the daytime, and I do not believe the males stridulate long after dark, for I slept several nights in a tent in the 'Chaparral' among them, and do not remember hearing them after dark. The shrubs which they inhabit are a compact growing species, affording a place of concealment by day, while their thick tops offer unusually advantages for the roof garden concerts of the stridulators at twilight. The stridulation is feeble and not continued beyond a few seconds with a period of rest. When captured they offer little or no defence, and their saltatory powers are small and not willingly used."

NOTES ON MAMESTRA OLIVACEA MORR. AND ITS ALLIES.

BY JOHN B. SMITH.

In Volume XIV of the Proceedings of the United States National Museum, 1891, I published a revision of the species of *Mamestra*, including in the group *olivacea* (p. 253) three species to wit: *olivacea*, *rectilinea* and *vau-media*. After referring to the variability of the series I added: "It would not be a matter of much surprise if, eventually, all the species here referred proved forms of the same type." Forms of the same type they surely are; but not, as I now believe, in the sense I meant that phrase to be taken.

To *olivacea* I cited *comis* Grt. as a synonym, and added a new variety, *obscurior*, from Maine. The latter was differentiated as "very evenly dark gray, with a green suffusion, the lines velvety black, a red shade on t. p. line inferiorly, secondaries blackish." No example of this form is at present before me.

Concerning *comis* I said: the type "is a very bright, strongly marked specimen, like typical *olivacea*, but so spread that the insect appears more plump, shorter winged and differently marked." Mr. Grote never accepted this reference, and he was right. My statements concerning the type were correct. It is a good specimen which seems to have been spread when fresh, in such a way as to make a fold or kink at the base of the primaries: this results in apparently shortening the wing, eliminating the basal line and decreasing the basal space or distance to the t. a. line.

In rearranging my collection recently I found that there was an apparently constant difference in general appearance between specimens from different localities, and to test whether this was really more than an appearance, I secured a series of specimens from Florida, Manitoba, Vancouver, Colorado, Utah and California, through the courtesy of Dr. Barnes, Dr. Dyar of the U. S. National Museum, Mr. Wm. Beutenmuller of the American Museum of Natural History, Mr. Hanham and, by purchase, from Mr. Franck. A few specimens came just then from M. Cordley, of Corvallis, Oregon, and I had in my own and the College material examples from California, Vancouver and other localities. Altogether, something like 125 examples were under examination. After arranging

them in series, sexes separated but associated, I examined the male genitalia of each series, permanently mounting twenty examples on slides in Canada balsam. Each of these specimens was drawn under the microscope, using a camera lucida, and as the lens was the same throughout, and the drawing board always at the same point, the figures were strictly comparable. Before going into details of structure or specific description, it may be well to note the general differences apparent in the series, and the distribution of each series.

The first series, which I consider typical *olivacea*, is represented by 20 males and 6 females. Localities are Orono and other points in Maine; Webster and White Mountains, N. H.; Lenox, Mass.; Sharon Springs, Schenectady, Albany and Long Island, N. Y.; New Brunswick, N. J.; Miakka, Florida; Glenwood Springs, Colorado—one male only. There is a possible error as to this last example since it reached me without label, associated with others undoubtedly from that place, though not from Dr. Barnes. These examples average 25 mm., or 1 inch, the more northern specimens exceeding, the Florida examples not quite attaining that expanse. In the males the maculation is always distinct, the median space darkest; s. t. space gray and variably contrasting: the basal space is also paler, but does not contrast so strongly. The females are darker, more evenly colored and without marked contrasts. In the s. t. space, particularly toward the inner margin, there is a powdering of yellowish or greenish scales, which, in the male, usually extends through a great portion of the wing, giving a certain mossy or olivaceous appearance which is characteristic; but more easily seen than described. In the female this is less apparent. There is no distinct reddish shade in any male, but in the females there is a decided tendency in that direction. The space opposite the anal angle is obviously brown; but it is a yellow and not a red-brown. The best marked and most obviously mossy specimens are those from the northern localities; as the examples decrease in size in Florida, so also there is less of the powdery appearance.

Four permanent mounts made from this series show practically no difference in genitalic structure.

The next series of specimens consists of 16 males and 6 females from Winnipeg, Cartwright and Brandon, Manitoba; and Yellowstone Park, Wyoming. They range from 22 to 25 mm. in expanse,

the average for the series being 24. The maculation is practically like that of *olivacea*, but somewhat less distinct. But there is no mossy appearance, and no yellow or greenish powdering, all this being replaced by an obviously reddish shade. The terminal space here is almost uniformly dark, whereas in *olivacea* it is only a little if at all deeper than s. t. space, except in the female. These two features give a different appearance to the series. The females are much darker, with either very little contrast or with a rather well marked though narrow paler s. t. space, and very sharply defined dark terminal space.

Three permanent mounts were made from this series, specimens varying in appearance being selected. They agree with each other, and differ from the previous series in having the base of the harpes narrower, the tip less scoop-shaped, broader, and the inferior angle of tip more prominently extended or drawn out. The claspers are practically the same. The differences are slight, as are those in appearance. A geographical race rather than a well-developed species is suggested, and this race—it is not a variety—may be termed *lucina*.

The third series consists of four males and thirteen females, reversing the proportions of the sexes found in the previous series. With two exceptions these are all from Glenwood Springs, Colorado; the exceptions being one female from South Dakota—probably Volga, and one female from Hot Springs, New Mexico, elevation 7000 feet.

The specimens range from 24 to 26 mm., the greater number exceeding 25 mm. in expanse. There is no trace of mossy or yellowish discoloration in any specimen, and there is only a feeble reddish flush in the s. t. space inferiorly. This disappears entirely in some examples—male as well as female. In the male the s. t. space is gray except on the costa, not prominently contrasting, and the basal space is only grey powdered; the terminal space is usually darker. In the female the contrasts are even less marked. The basal space is hardly lightened, except along the course of the t. a. line, while in some examples the s. t. space is almost concolorous above the middle. There is no reddish shade in the basal space in either sex, and the color in the s. t. space is a dead, dull, leathery shade rather than a rosy tinge.

Only one permanent mount was secured from this series, two of the four males having lost abdomens in the transportation. I had,

however, a number of others not enumerated here and not available for dissection. This one example shows no practical difference from those of series two, hence does not aid in recognizing a species. It differs sufficiently in size and general tint to be considered a race, ranging the Central and Southern Rocky Mountains and extending into the North Plains. The second series, *lucina*, ranges the Northern Rockies, into British Columbia and the foot hills and plains fronting them. The name *altua* may be used for this form or race.

A modification of this series occurs in five males and two females labelled "Utah," from the Henry Edwards' collection. These are all more sharply marked, with a paler basal line and a more obviously geminate t. a. line. The gray seems to have a peculiar dead tinge, so while there is plenty of contrast it is not a live or bright relief. I consider this a form or variation of *altua*, and the exact locality is probably Salt Lake City.

Two specimens of the genitalia were mounted and accord practically with those of the series as already described.

The fourth series consists of six males and seven females from Glenwood Springs, Hall Valley, Veta Pass and Durango, Colorado; and one female from Senator, Arizona. These specimens expand from 25 to 27 mm., most of them 26 or over, and they are therefore, as a whole, larger than any others. The dates for these specimens are June, July and August; the dates for the third series covering the same territory are July, August, September and October; there is thus a chance that this form is seasonal and really the same as *altua*. Comparing males the maculation of this series is decidedly more contrasting, the basal space is decidedly lighter, almost always with a reddish shading. The s. t. space is gray, and the gray tends to, in some case does involve, the terminal space. The reddish shading in s. t. space is diffuse, and, while it is sometimes confined to the region opposite anal angle, is usually spread so as to tinge the entire space. The reniform is distinctly kidney shaped in most examples of both sexes, and is always proportionately larger than in any of the preceding series. I place some stress upon this point, because in *altua* the reniform is uniformly oblong, upright, a little larger superiorly, the angles rounded. There is a little kidney shape of course, but nothing like the decided form found here. In the female the tendency to obscure the s. t. space is quite as strong as in *altua*, and the reddish shade is quite as much restricted.

Three permanent mounts were made from this series, and, except

in the somewhat larger size, did not differ from *lucina;* in fact, except for its uniformly larger size, this resembles the British-American form more closely than it does the one found with it. The example from Senator, Arizona, is a female, with the s. t. space only a little paler, and a mere trace of reddish opposite the anal angle. This form covering the same range as the preceding can scarcely be considered a race; it may, as already suggested, be the first brood of *altua*, better nourished than the other; but if that is the case, the broods lap seriously, one example being dated August 24–30, while one female *altua* from the same locality is dated July 16–21. This particular form may be known as *megarena*.

The fifth series is composed of five male and seven female examples from Sierra Nevada, California, which came originally from Mr. Henry Edwards. With the same type of maculation as in *megarena* the contrasts are much greater, and the red shade in the basal and s. t. space is much more pronounced. But there is no doubt as to the standing of this form, because the male genitalia are very markedly and obviously different from any other, resembling much more nearly *quadrilineata* than *olivacea*. This is a good species, and I have applied to it the name *davena*.

The sixth series is composed of five females from Livingston, Vancouver (vii, 17); Corfield, Vancouver; Corvallis, Oregon (vii, 19, 21 and viii, 3). These have a darker, richer color than any of the preceding; the lines are more irregular, and there is a mossy green shading in both the basal and s. t. spaces. This brings the series nearer to typical *olivacea* than any other of the intermediate forms; but here again the reniform is large and irregular, tending to become discolored. It is unfortunate that I have no good males; but I have no serious doubt that we have to do with a good species which I call *obnigra*. There is a single male from Nanaimo, Vancouver, that I have associated with the females, but it is so badly rubbed that little can be made of it, save that it is very like *davena* and even more brightly marked. The genitalia of this specimen tell nothing and are very like tyical *olivacea*. The example is certainly none of the other species from this region.

The seventh series is composed of one male from Seattle, Washington, and three females from Corfield, Vancouver. The male expands 28 mm., the females 24 and 25 mm. This raises the question whether the specimens are correctly associated; but I believe they are, and that more material from Washington will lessen the disproportion. The species again becomes olivaceous, and the mossy green in the male extends throughout the wing. In the female a reddish

shade is met with which does not exclude the mossy green, except in the smallest example, where it must be sought for closely. We have almost the exact counterpart now of the New England examples in appearance, and differentiation might be difficult were it not for the fact that the male organs come to our assistance. The harpes are much the same, but the clasper becomes a long, very slender, curved hook, very unlike the short, stout, blunt process in *olivacea*. We have therefore a good species which I call *petita*, and which represents typical *olivacea* on the Pacific Coast.

The eighth and last series is represented by five males and two females, and is what Mr. Grote named *comis*. All the males are from Vancouver: Livingston, August 10, '96; Corfield, September 7, '95; Nanaimo, July 1, '92. One female is from Livingston, Vancouver, July, 22, '96; the other is from Soda Springs, California, September 25th. The latter specimen is from the Henry Edwards' collection, and is interesting because it bears a label, in Mr. Grote's handwriting, "Mamestra olivacea Morr"! I do not consider Mr. Grote's failure to recognize the female of his *comis* as distinct from that of *olivacea* at all surprising or to his discredit; it simply shows how very similar the two species really are. The male is quite as similar to true *olivacea* as is the female, as my own failure to recognize their difference shows. In maculation there is no difference; but the s. t. space is a very pale, almost whitish gray, and the greenish, mossy shading toward the inner margin is dull, without trace of yellowish. The basal space is also green marked, especially in its lower portion. The tendency is to a broad green shade from base along inner margin to the t. a. line; upward along this to the median vein, then beneath this to the base or place of beginning. Variation consists in the relative distinctness or obscurity of this shading which is perfectly present in one of the females. The most obvious character, however, is the tendency to discoloration in the reniform. It is whitish filled, without dark centre, and therefore unlike the typical *olivacea*.

The male genitalia are on two slides and confirm the separation of the species, albeit the differences are not great. The harpes offer little that is characteristic; the clasper is more curved than in *olivacea*, and is drawn out into a long point, instead of being bluntly terminated.

To divide what we have so long known as *olivacea* into eight separate species seems at first like a bad case of unjustifiable splitting; but it must be remembered that three of the species—*comis*,

petita and *davena*—show obvious or even striking genitalic differences. *Obnigra* is definitely known in the female only; but seems so obviously different that I have no fear of its validity. *Lucina*, *altua* and *megarena* may be races of *olivacea*, or the first and second may be one species differing from either *olivacea* or *megarena*. The mossy green suffusion, which I consider characteristic of *olivacea*, may not be so really; but the material in my hands is the most complete that has ever been assembled and it justifies my course. A larger material of *bred* forms may disprove three of my names as species. I think they will stand as races.

It should be said as a caution that faded and badly rubbed examples of *olivacea* lose their characteristic appearance to a considerable extent. To be fairly comparable, material from all species should be in equally good condition.

The accompanying plates illustrates the male genitalia of all the forms; it is not given so much to show actual differences as to prove constancy of type.

Mamestra lucina n. sp.

Practically all that is distinctive in this form has been already noted. It is not a good species as I take a species now. It is not a variety as that term is usually understood; it is a race or form differentiated to some extent from the parent type. The most obvi ous characters are smaller size, somewhat less distinct maculation and total absence of all mossy, greenish or yellowish powderings or shadings.

Mamestra altua n. sp.

The essential characters of this form have all been given. Practically it is the eastern species with all the color out. No mossy or yellow, no red; only a dull ash gray, somewhat powdery to dis tinguish it readily from *megarena*, and a few leather brown scales in s. t. space opposite anal angle. The female is a little more evenly dark powdered than the male. The Utah series shows somewhat more contrast, but in a peculiarly dead tinge.

I have marked this new species; it is only a race—a geographical race—an incipient species. The name may be considered a little premature, and I am quite content to let it be placed in a subordinate position. It is not a variety.

Mamestra megarena n. sp.

Ground color a dark ashen gray, tending to black or deep smoky. Collar with a central black line, white tipped, sometimes gray dusted. Patagiæ more or less gray powdered. Primaries gray powdered, in the female very slightly, in the male obviously so, but never contrasting. S. t. space gray, with a reddish tinge

more obvious or confined to lower half; costal region of the dark ground. In the female the contrast is sometimes very slight, and the reddish shade is always confined to the lower third of space. In the male there is usually a reddish tinge in the base as well, and this is sometimes traceable in the female. A short curved black basal mark extends to the basal line, somewhat emphasizing it. T. a. line obviously geminate, quite regularly outcurved, the inner line distinct, included space whitish and linear. Sometimes this white included space is about the only part of it that is visible. T. p. line somewhat squarley exserted over the reniform, then evenly incurved to inner margin, narrowing the median space quite obviously in some males. S. t. line quite well defined by the contrast between the darker terminal and light s. t. space. In course it is somewhat irregularly sinuate. The apex is hardly paler in most examples. Claviform marked in black, but scarcely visible in the dark ground. Orbicular round or nearly so, small, pale ringed, centered by the ground. Reniform whitish ringed, in the male a little lighter, in the female about the same color as the dark ground.

Hab. —Size and general structure as already described.

The more closely I study this series the more am I convinced it is a good one. It is not *altua*, which is probably a true race of *olivacea;* and it is not *lucina*, which stands in a parallel position. It is perhaps a species *Darwiniana*, well advanced and ready to support itself. It has a smoother, less powdery appearance than any of its immediate allies.

Mamestra davena n. sp.

Maculation of the normal *olivacea* type; but brighter, more contrasting, a leather-brown stain preceding the t a. line, and a similar one beyond the sinus of the t. p. line opposite the hind angle. Front brown and white mottled, with a deeper brown line across the front. Collar with a blackish line across the middle, below which it tends to reddish brown, above to smoky or darker. Thorax with quite a prominent brown thoracic tuft, patagiæ gray or gray mottled; disk gray or smoky. Abdomen of the usual dull gray. Primaries with the maculation well written on the two examples before me. Basal line geminate, black, in one example white filled, in the other a lighter shade of the smoky ground. A short curved black basal dash. T. a. line well removed from base, outwardly oblique and outcurved, reaching the inner margin at almost its middle; geminate inner line obscure, white or pale filled. T. p. line squarely exserted over the reniform, then with a well-marked incurve below. It is obscurely geminate, the outer line faint, included space white or gray. S. t. line narrow, white, a little irregular. A series of pale points at the ends of the veins. A very narrow dusky line at the base of the fringes. Terminal space dark ashen gray, except at tip, where it is whitish. S. t. space whitish, except on costa, where it is smoky, and toward inner margin where it is flushed with reddish brown. Claviform faintly traceable, concolorous, outlined in black, short and broad. Orbicular oval, oblique, of moderate size, black ringed, narrowly annulate with white, a little paler filled than ground color. Reniform upright or nearly so, oblong, with corners rounded, white or gray filled. Secondaries a little smoky, fringes white; a very obscure discal lunule. Beneath smoky gray; secondaries paler, more powdery, with a blackish discal spot.

Expands 26–27 mm. = 1.04–1.08 inches.

Hab.—Sierra Nevada, California.

Five males and seven females in my collection and in the collection American Museum of Natural History. I have long had two of these examples as part of the intermediates between *olivacea* and *comis*, and that is exactly what they look like. The male genitalia are totally different however, and ally the species to *quadrilineata*, though with some tendency to normal *olivacea* in the patch of spinules at the lower angle of the tip of the harpes.

All the specimens came originally from the Henry Edwards' collection, and the description was made from the males. The females agree in all essential points, but are on the whole a little darker; not so much so, however, as is usual in this group of species. One ♀ example only, marked Siskyou, California, is much darker and also much smaller (25 mm.), and narrower winged than any other.

It seems to fit this series in all other respects, and I have included it as a cripple, without considering it in giving either size or general locality.

Mamestra obnigra n. sp.

In general appearance and type of maculation like *olivacea*, with a mossy greenish, but no trace of yellowish tinge anywhere on the primaries. As a whole, the head and thorax vary from dark gray to blackish, the disk of the patagiæ whitish in the female, in the male tinged with reddish. Ordinary lines more or less well defined in all examples, geminate, included space filled with white. Median space always darkest, reaching an intense black in which the ordinary spots are not especially well defined. The orbicular is a mere annulus, the reniform small, paler, narrowly black margined, annulate with an inner dusky centre. There is an obvious tinge of green in the basal space, and in the s. t. space this is more or less distinct, especially toward hind margin on which all my female examples show a half round dusky spot. There is a good deal of variation in the relative contrasts in these markings, and also in the color of the secondaries, which varies from whitish to smoky blackish, with all intervals of smoky outer margin and white base. Size and habitat have been already given.

The specimen which I have placed here as a possible male is much more contrasting in color, and a reddish tinge is obvious in basal and s. t. spaces. The male characters have also been discussed.

The three examples from Corvallis are really the typical series, the darkest and freshest example being marked type. A second example is much more flown, the greenish largely faded; but obviously it was a form very like the type when fresh. The third ex-

ample is an excellent one, much more obscure and powdery in appearance, and looks as if it had been too long in the cyanide, causing the green to change toward that peculiar reddish tinge that it often assumes. The Vancouver examples are both uniformly gray, the s. t. space being scarcely lighter than the median, but with the mossy green well developed.

With a better series of both sexes I doubt not this species will be found fully established.

Mamestra petita n. sp.

Like *olivacea* in maculation, with a mossy overlay which changes to reddish in the female. This is obvious throughout the wing, but more prominent in the basal and s. t. spaces. The latter is gray, contrasting in both sexes, more or less marked, however, by the greenish or reddish tinging. The terminal space is only a little or not at all darker. Reniform tends to become kidney shaped, and is mossy or reddish filled. The orbicular is round, proportionate and paler than usual in *olivacea*. T. a. line rather evenly outcurved, geminate, the inner line faint and really indicated only by the contrast between the paler filling and the basal ground color. T. p. line evenly bisinuate, inner line black, outer punctiform and fragmentary. There is a rather obscure dusky median shade. Claviform rather large, black ringed, pointed.

Habitat, size and genital structure as already noted. Taken altogether this is a brighter, more contrasting species than *olivacea*, but not so striking as *comis*. The net result of the studies here made is shown in the following list:

Mamestra olivacea Morr.

Eastern United States to Florida; Canada; west to the Mississippi River and beyond to the elevated plains.

var. **obscurior** Sms

Maine: a very heavily powdered form.

Mamestra lucina Smith.

A geographical race occupying that part of British America extending from Winnipeg northward and westward to the Rocky Mountains. Probably extends east and south of this into the United States, and should occur in the Yellowstone region.

Mamestra altua Smith.

A geographical race occupying the elvevated plateau approaching the Rocky Mountains and extending southward along this chain into New Mexico.

Mamestra megarena Smith.

Probably a good species, inhabiting the same general region as the preceding, but the material is too scant to speak definitely.

Mamestra davena Smith.

A good species without doubt, thus far received from Sierra Nevada, California, only. I would expect it to extend along the entire range, but it may not get into the Cascades, or, if it does, not north of the Columbia River.

Mamestra obnigra Smith.

A good species I am convinced, ranging the lower region toward the Pacific Coast, and may not get into the mountains, or at any rate east of the Cascades and the Selkirks.

Mamestra petita Smith.

Also a good species, concerning whose distribution little can be said definitely; Seattle, Washington, and Corfield, Vancouver, are not enough to generalize upon.

Mamestra comis Grt.

A good species without doubt, and it probably entends from Vancouver south well into California; but I do not know just where Soda Springs is in California, hence cannot say whether it is a mountain or coast-line form.

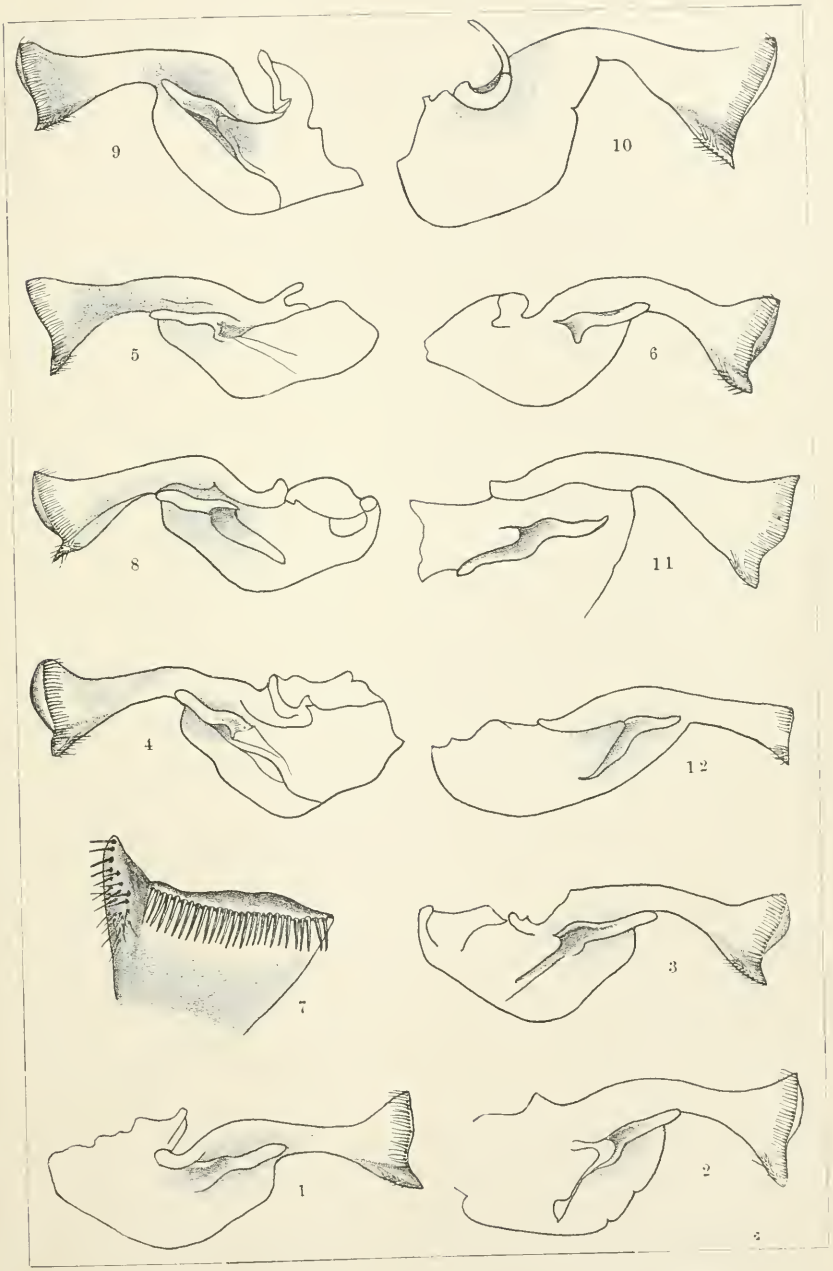
EXPLANATION OF PLATE X.

Genitalia of ♂ *Mamestra olivacea* and allies: all drawings save Figure 7 made with camera lucida, 2 inch objective at same distance from eye piece, and no attempt has been made to correct distortion caused by mounting.

1. *Mamestra olivacea* Morr.
2. " "
3. " "
4. " "

These figures show all the apparent range of variation due to greater or less pressure on the object; figure 4 is the most complete specimen and about normal in position.

5. *Mamestra lucina* Smith.
6. " "
7. " *altua* Smith. Tip of harpe only made with ½-inch objective to show details of spinulation; the number of spines is exact.
8. *Mamestra megarena* Smith.
9. " *obnigra* Smith.
10. " *petita* Smith.
11. " *comis* Grt. An imperfect specimen; too much flattened and somewhat broken.
12. *Mamestra davena* Smith.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NEW SPECIES OF GEOMETRIDÆ FROM TROPICAL AMERICA.

BY W. SCHAUS.

Part II.

Boarmiinæ.

Lythria ? sarruncaria.—Body light brown. Wings ochreous; a terminal black line; fringe buff, mottled with black. Primaries somewhat irrorated with brown scales; a median and an outer curved, wavy, brown shade. Secondaries: a median and outer wavy black line, starting from large black costal spots; the outer line somewhat dentate from vein 6 to inner margin; the apex black. Underneath primaries ochreous, irrorated with black at base, on costa and outer margin; the lines black; the median followed by a black discal spot; the outer line followed by a cluster of black scales between veins 5 and 6. Secondaries ochreous brown, irrorated with brown scales; the lines brown, widest on costal margin; a terminal dark line on both wings. Expanse 29 mm.

Hab.—Oaxaca, Mexico.

Cyclomia ocana.—Body gray. Primaries: basal half pale grey, thickly irrorated with darker grey; a fine inner line, angled below costa; a broad median, dark brown, straight line on which is a large yellow discal spot; costal margin just before and beyond median line yellowish, striated with black; outer space buff, striated with brown, leaving a fairly clear ochreous brown band before the marginal space, which is brown, thickly striated with a darker shade; fringe dark brown. Secondaries: buff at the base, irrorated with grey: a dark median line, not so wide as on primaries; the outer space ochreous brown; the marginal space dark brown; with paler ochreous mottlings on the extreme margin; fringe yellow. Underneath dull yellow, striated with violet, chiefly on secondaries. Expanse 20 mm.

Hab.—Oaxaca, Mexico.

Cleta sericearia.—Wings light violaceous brown; the lines olivaceous. Primaries: distinct inner, outer and subterminal lines; a dark brown discal spot; costa finely buff with dark striæ. Secondaries: lines less distinct in the ♂; outer and subterminal lines, the former straight, the latter curved; a dark terminal line in the ♀; in the male the anal angle clothed with silky scales. Underneath paler; the outer and subterminal lines distinct. In the female the wings underneath are pale striated with brown. Expanse ♂ 13 mm., ♀ 17 mm.

Hab.—Rio Janeiro, Sao Paulo.

Cleta albipunctaria.—Wings dark brown; lilacine white discal streaks; traces of an outer and subterminal, interrupted, fine whitish line; also a similar inner line on primaries; marginal lilacine white spots; four larger white spots on costa of primaries before apex; fringe paler brown. Underneath brown, with

traces of marginal white spots, and the costal spots on primaries smaller. Expanse 11 mm.

Hab —Castro, Parana, Rio Janeiro.

Wings with the outer margins rounded.

Cleta faragita.—Body brown, fore coxæ and legs buff, irrorated with black. Wings dark brown; a black median line crossing the cell spots, which are reddish, circled with black; an outer curved black line, followed on costa of primaries by a large reddish brown spot; an interrupted terminal black line; fringe brown, mottled with reddish brown. Primaries: a curved dark inner line; a subterminal dark line below costa; yellowish striæ on costal margin. Underneath violaceous; discal spots orange; a dark outer line. Primaries: orange striæ beyond cell to outer margin, and a large costal orange spot before apex. Secondaries: some orange striæ on outer margin. Expanse 12 mm.

Hab.—Trinidad.

Wings shaped as in *C. epionaria* Gn.

Numia axanaria.—Primaries greenish yellow; costa with four clusters of dark striæ; a small white discal spot, shaded with black; a faint inner line; a broader outer shade, olivaceous, most heavily marked on inner margin; fringe grey. Secondaries pale ochreous; a minute greyish discal spot; a dark median shade not reaching costal margin; fringe yellow, with ochreous shadings at ends of veins. Underneath pale yellow; minute black discal points. Expanse 22 mm.

Hab.—Oaxaca, Mexico.

Numia lermia.—Head and collar pale brown. Thorax and abdomen yellow. Primaries bright yellow; a few brownish irrorations; costa buff, with darker irrorations, forming a large spot at origin of inner line, and a smaller spot at origin of outer line; inner line fine, almost imperceptible, punctiform on median and submedian veins; a black discal point; outer line fine, straight, angled below costa; a costal spot before apex; fringe bright yellow. Secondaries whitish buff; bright yellow at anal angle; a small discal spot; traces of an outer line. Underneath ochreous, irrorated with dark brown striæ; the inner margins broadly whitish and unmarked; traces of lines; the outer margins greyish; fringe greyish, on primaries spotted with brown. Expanse 21 mm.

Hab.—Pernambuco, Brazil.

PHALUDIA gen. nov.

Antennæ serrate, finely haired; palpi short. Hind tibia with two pairs of spurs. Legs long. Abdomen extending well beyond secondaries. Primaries long and broad; outer margin obliquely rounded; veins 3 and 4 from a point; 6 from upper angle; 7–10 stalked. Secondaries small; outer margin rounded; veins 3 and 4 and 6 and 7 from a point; 8 anastomosing with 7 to near end of cell, then diverging.

Phaludia janeira.—Head brown. Collar buff. Thorax and abdomen violaceous brown, the latter with lateral buff spots; buff underneath, and anal hairs buff Wings dark violaceous brown; a broad median buff band mottled with olivaceous. Primaries: the costal margin buff from base to median band, irrorated with black striæ; a buff apical spot. Underneath similar; the median band pale yellow without markings; the costa of primaries dark with buff striæ; the apical spot smaller. Expanse 18 mm.

Hab.—Rio Janeiro.

Microxydia pulveraria.—Wings pale buff, irrorated with brown scales, chiefly on outer margin. Primaries: an inner, median and outer dark spot on costal margin; a dark brown discal point; faint traces of an inner line; median shade and outer line; fringe dark brown, buff at apex and inner angle. Secondaries: a dark median line not reaching costa; a faint outer line; fringe buff, mottled with brown. Underneath buff, much more heavily irrorated with brown. Primaries: a dark space on outer margin between 4 and 6; costa and apex tinged with yellow. Secondaries with the outer line broken into spots. Expanse 15 mm.

Hab.—Orizaba, Mexico.

Semiothisa grisearia.—Wings grey, thickly covered with darker striæ and irrorations, violaceous grey; the lines reddish brown; the median line straight, crossing the black discal spot; the outer line curved, wavy; a terminal dark line; fringe grey, darkest at base. Primaries: an inner line angled below costa, then inwardly oblique; a subterminal wavy line, followed by some whitish scales near costa; apex mottled with white. Secondaries: the subterminal line very indistinct; some whitish scales at anal angle. Underneath dull greyish brown; faint traces of median and outer lines. The primaries are acute; the apex slightly falcate; the secondaries angled. Expanse 31 mm.

Hab.—Colombia.

Quite distinct from any described species of the genus.

Eusarca guadaria.—Primaries light brown, darker between the lines, and slightly irrorated with darker brown; the fringe dark brown; the lines pale buff, shaded on median line by very dark brown; the inner line olique from costa to vein 2, then slightly curved inwardly to inner margin; the outer line from apex slightly curved to inner margin; a black discal point, followed by a dark brown shade. Secondaries ochreous, shaded with brown on inner margin; fringe dark brown. Underneath primaries ochreous, slightly striated on costa, and outer margin with brown; a black discal spot; a faint trace of the outer line. Secondaries pale brown, shaded with ochreous at base; a small discal spot. Expanse 23 mm.

Hab.—Guadalajara, Mexico.

PSEUDAPICIA gen. nov.

Differs from *Apicia* Gn. in having the male antennæ simple.

Pseudapicia basivirida.—Head violaceous brown. Body bright olive green. Wings with the basal half bright olive green, the outer half violaceous brown. Primaries: costal margin violaceous brown; an inner reddish brown line, curved in cell, then slightly oblique to inner margin; an outer reddish brown line, angled on costa, the angle with a dark streak to apex; this line followed by an irregular darker shade of brown; discal spot minute, black. Secondaries: a median reddish brown line; some outer darker brown shadings; fringe dark reddish brown. Underneath greenish yellow, striated with dull brown. Primaries: a broad dark shade in place of inner line; outer line distinct; the costa dark grey, with a whitish spot before apex; outer margin mostly reddish brown. Secondaries with outer half reddish brown; median line distinct. Expanse 25 mm.

Hab.—Peruvian Amazons.

The margins are slightly angled, as in *Apicia cayennaria* Gn.

Pseudapicia ? pallidaria.—Shape and general appearance of *Apicia plebejata* Snell., which also has simple antennæ. Wings dark buff; a fine outer line, reddish, outwardly shaded with yellow; there is a black spot at the angle of this line below costa of primaries, and the angle is not so close to apex as in *plebejata;* on primaries a similar inner line inwardly shaded with yellow, and a black discal spot; base of fringe slightly darker. Underneath yellowish buff; the apex of primaries slightly irrorated with black; some outer dark points on veins below costa of primaries; black discal points on both wings. Expanse 25 mm.

Hab.—Orizaba, Mexico.

Acrotomodes chiriquensis.—♂. Body grey above, reddish brown below. Wings greyish brown, irrorated with a few dark spots. Primaries: costa dark brown, irrorated with grey; some violaceous brown at base; an inner broad violaceous brown shade, continuing above vein 2 to beyond the outer line, and almost reaching apex on costa; the outer line fine, darker, dentate-lunular; a subterminal dark brown spot above inner margin, and another between veins 3 and 4; fringe reddish brown. Secondaries greyish brown, tinged with lilacine; the outer margin shaded with violaceous brown, especially at apex; a reddish brown basal line; a dentate indistinct outer line; some subterminal reddish brown shadings. Underneath reddish brown. The primaries to outer line are tinged with lilacine; some black irrorations; the outer line black, more heavily marked on primaries than on secondaries; a pale mark at apex of primaries.

♀.—Similar underneath, but still darker. Above dark violaceous irrorated with whitish scales, the outer line reddish brown, lunular; a median narrow dark shade, angled on costa: paler subterminal shades; subterminal black spots above inner margin, between 4 and 5, and 6 and 7; from the last spot to apex a whitish line. Expanse ♂. 26 mm., ♀ 30 mm.

Hab.—Chiriqui.

Eusenea parva.—Primaries: the base brown, limited by a dark grey line; the inner space greyish brown, limited by a dark grey line, angled in cell; the median space dark reddish brown, limited by the outer line, which is nearly straight, lilacine; the discal spot dark grey, circled with black; the marginal space and fringe light brown; some black marginal spots shaded with white be-

tween the veins. Secondaries greyish on costa, otherwise basal space dark brown, limited by an outer pale line; the marginal space greyish brown towards apex, light reddish brown at anal angle; black marginal spots near apex and near anal angle. Underneath: costal half of primaries greyish brown, shaded with red on outer margin and at apex; below median and vein 3 the wing is greyish buff; discal spot black, cut by a buff line; marginal spots as above. Secondaries lilacine brown; a white discal spot; a wavy whitish outer line inwardly shaded with dark grey; some light reddish brown at anal angle; marginal spots as above. Expanse 26 mm.

Hab.—Sao Paulo.

Looks somewhat like a small *E. rotundata* Warr.

Tetracis pagonaria. ♂.—Antennæ buff, with a fine black line above. Body buff. Wings buff, shaded and striated with light brown. Primaries: a black point in the cell; inner line fine, angled below costa, then straight to inner margin; outer line dark brown, inwardly shaded with buff from costal margin at four-fifths to inner margin at two-thirds. Secondaries with a single line and very minute discal point.

The ♀ is browner as a rule. Expanse ♂ 32 mm., ♀ 36 mm.

Hab.—Orizaba, Amecameca, Mexico.

Metanema excavaria. ♀.—Body brown. Wings brown, thinly irrorated with black scales, and shaded with darker brown on outer margins. Primaries: a black discal point; lines reddish brown, distinct; the inner line angled at costa, then straight to inner margin; the outer line from costal margin near apex to inner margin at two-thirds from base; the outer line continued on secondaries to middle of inner margin. Underneath fawn color, irrorated with black scales; the outer margins brown. Expanse 33 mm.

Hab.—Orizaba, Mexico.

Therina pardiria.—Wings yellowish buff, covered with small, violaceous grey spots; the lines the same color; a broad outer line, the edges of which are somewhat dentate. Primaries: an inner broad line, outwardly oblique from costa, then inwardly curved to below median vein, then inwardly oblique to inner margin; the inner and outer lines are connected below the median vein by a bar, so the lines have the appearance of forming a semilunar line on inner margin, surmounted by a circular line; the angle of the inner line in cell being continued by a bar to the outer line at vein 3. Underneath similar. Expanse 29 mm.

Hab.—Chiriqui.

Cannagara sagiva.—Head and thorax dark fawn color. Abdomen reddish brown. Primaries reddish brown; some black and grey scales on costa; inner line very fine, wavy, slightly darker; a small black discal spot; outer line somewhat oblique from costa near apex to vein 4, below which it is slightly curved inwardly and straight below vein 2; a small black spot beyond outer line between veins 5 and 6. Secondaries reddish brown, paler at the base; a black discal spot; a faint outer line. Underneath: secondaries, also costa and apex of primaries

ochreous, irrorated with black; primaries otherwise reddish grey; on secondaries a grey discal spot, and wavy, grey outer line, edged outwardly with lilacine. Expanse 34 mm.

Hab.—Las Vigas, Mexico.

Thysanopyga maresa.—Frons reddish brown. Body grey. Primaries grey, striated with black; lines fine, pale reddish brown; an inner line angled on costa; a median line followed by black discal point; an outer line followed by a broad shade, narrowing between veins 4 and 5, also pale reddish brown, becoming darker before an apical black shade. Secondaries grey at base, otherwise pale reddish brown, striated with black; a basal black spot; the median and outer lines reddish brown; a large black discal spot. Underneath pale grey; the margins darker; small discal spots. Expanse 22 mm.

Hab.—Sao Paulo.

Thysanopyga lollia.—Body brown; the end of abdomen grey. Wings brown, irrorated with darker scales; a median wavy reddish shade; an outer row of small white spots on veins, preceded by a short blackish mark; fringe violaceous. Primaries: the median shade followed below costa by a large yellow spot, outwardly limited by a dentate dark line, followed by three whitish spots; three inner spots on veins, white, outwardly shaded with black. Underneath paler, tinged with yellow; minute black discal spots. Expanse 27 mm.

Hab.—Sao Paulo.

Petelia nigriplaga.—Wings deep red, irrorated with black scales. Primaries: a large irregular black space from end of cell to close to outer margin, between veins 3 and subcostal. Secondaries with a large blackish space at anal angle, crossed by darker lines, outwardly shaded with reddish brown. Underneath pale reddish brown, with traces of the black spaces on upper side. Expanse 30 mm.

Hab.—Jalapa, Mexico.

Lobopola transoma.—Wings violaceous brown. Primaries: a basal and a broader outer transverse band, the latter narrower on costal than on inner margin, and outwardly toothed between veins 5 and 6; these bands are pale roseate brown, irrorated with darker scales; a grey discal spot. Secondaries with an outer irregular band of pale roseate brown; fringe reddish brown. Underneath buff at the base; outwardly reddish brown with darker irrorations; traces of a reddish median line; a pale discal spot on primaries. Expanse 35 mm.

Hab.—Jalapa, Mexico.

Allied to *L. cimarrona* Dogn.

PHEROTESIA gen. nov.

Antennæ pectinated in the ♂, simple in the ♀. Palpi extending beyond frons; third joint very short. Primaries broad; costal margin slightly convex towards apex; outer margin slightly rounded;

vein 3 from before end of cell; 6 from before upper angle of cell; 7, 8 and 9 stalked; 10 from cell. Secondaries broad, produced at vein 3; costal margin somewhat convex; outer margin straight to 3, there rounded, and then straight again to anal angle; on vein 2 a swollen glandular spot in the ♂; veins 3 and 4 apart; vein 5 present, and from near 4 in the ♂ only; vein 6 and 7 from upper angle of cell.

The peculiar neuration of the secondaries in the ♂ will readily distinguish this genus, which is quite *Boarmid* in appearance, and typically so in the ♀.

Pherotesia malinaria.—In general appearance very close to *T. condensaria* Gn., but altogether darker in color, and the male can be distinguished by the almost black secondaries and their quadrate shape. ♂ primaries: dark brown, irrorated with black scales and striæ; the lines black; basal and inner lines geminate; a straight median black shade, followed by black discal spot; the outer line lunular, followed by black spots above vein 4; subterminal black spots outwardly shaded with pale buff; a terminal black line much thickened between the veins. Secondaries dark brown, shaded with reddish brown, mottled with black in inner margin and anal portion of outer margin; a dark median line; a black terminal line. Underneath mottled buff and black; discal points black.

The ♀ is very variable and similar to *condensaria* Gn.

Hab.—Jalapa, Mexico.

Bormia condensaria Gn. also has vein 5 present on secondaries; it usually is stalked with 4, though sometimes they are from a point; there is no glandular swelling on vein 2.

Boarmia gitanaria.—Body greyish brown; geminate black dorsal spots at base of and on last segment of abdomen. Primaries pale rufous brown, thinly irrorated with darker brown scales, and striated with black on costa; inner line fine, black, from one-fourth on costa to near base of inner margin; an oval black discal spot; outer line heavy, black, angled above vein 5, then inwardly oblique to middle of inner margin, and forming from below discal spot to inner margin a very broad black band; a black punctiform line from costa to vein 5, beyond the outer line; a subterminal white dentate line, inwardly shaded with black between 4 and 6, and outwardly shaded with grey between 4 and 7; a faint subterminal line; fringe pale rufous, somewhat mottled with black and tipped with white. Secondaries whitish to outer line, then pale rufous brown; a dark line at base; a broad black median band not reaching costa, and followed by a black discal streak; outer line fine, black, punctiform; a subterminal dentate white line, preceded by a greyish shade; terminal line and fringe as on primaries. Underneath creamy white, including fringe. Primaries: the costa striated with black; a black discal spot; a large subapical black spot below vein 8 and reaching margin between 4 and 7. Expanse 45 mm.

Hab.—Sao Paulo.

Boarmia giacria.—Primaries brown, striated with black; the inner line fine, black, curved to inner margin near base; a broad blackish median shade, touching the outer line below vein 2 and crossing the black discal spot; the outer line fine, black, angled at vein 5, inwardly curved between the veins and punctiform on the veins; a vague blackish subterminal line, followed by a black marginal shade between veins 4 and 7; a terminal black line; fringe buff at base, outwardly blackish. Secondaries greyish; the outer margin shaded with brown, slightly irrorated with black and brown scales; the inner line straight, more distinct on inner margin; discal spot minute, blackish; outer line very fine, starting from a dark spot on inner margin, and inwardly curved to vein 2, then slightly outwardly and punctiform on veins; a subterminal blackish shade from anal angle to vein 3; terminal line and fringe as on primaries. Underneath pale buff. Primaries showing faintly some of the markings of upper surface. Secondaries with only a black discal point; the terminal line paler brown. Expanse 31 mm.

Hab.—Guadalajara, Mexico.

Boarmia sonicaria.—Wings light greyish brown in tone, somewhat thinly scaled and slightly striated with black. Primaries: an inner fine black line somewhat curved and punctiform on veins; discal spot large, smoky black; outer line fine, black, bluntly toothed on vein 6, then inwardly wavy to inner margin; this line followed on costal margin by a geminate black shade; a dentate subterminal white line; an indistinct dark terminal line joined by dark streaks between the veins. Secondaries whitish at the base; the inner line sinuous not reaching costa; discal spot grey circled with black; outer line more distinct, velvety black, inwardly curved from inner margin to between 4 and 6, then straight to costa, followed by some dark streaks on veins; the subterminal whitish dentate line preceded by a greyish shade and followed by a reddish brown shade; a terminal dark line: fringe mottled grey and buff. Underneath greyish buff. Primaries with a smoky black discal spot, and blackish shade beyond the cell, and before apex, which is yellowish. Secondaries without markings. Expanse 33 mm.

Hab.—Jalapa, Mexico.

Easily distinguished by its underside.

Tephrosia immarcata.—Wings buff, irrorated thinly with dark brown scales; terminal black points between the veins; fringe buff divided by a darker shade; the lines fine, brown; minute black discal points. Primaries: a wavy basal line; a faint inner shade; an outer lunular line, slightly oblique, partly punctiform, and some of the lunules followed by brown spots; a subterminal dentate white line, preceded and followed by dark brown spots between veins 4 and 6, and preceded by smaller brown spots between the other veins. Secondaries: an inner transverse shade; a fine, nearly straight outer line, followed by a reddish brown shade; subterminal dark brown spots, some of them shaded outwardly with white. Underneath buff, slightly irrorated with brown; s subterminal dark shade on primaries thickened at vein 5; on secondaries a subterminal reddish brown shade on apical half of wing. Expanse 36 mm.

Hab.—Peru, Brazil.

Belonging to the group of *E. argillaria* Gn.

Stenalcidia sincera.—Wings whitish, thickly irrorated with pale brown and grey scales, the general tone grey. Primaies: a fine dark brown inner line, curved below costa, then oblique to base of inner margin; a dark brown discal spot crossed by a median shade which joins the outer line at vein 2; the outer line fine, dark brown, interrupted before costa, and followed by reddish brown shades on inner margin, between veins 2–4 and 6–7; a dark costal shade before apex; a subterminal whitish lunular line; terminal dark spots between the veins; fringe grey, shaded with brown at base Secondaries: a dark inner line not reaching costa; a black discal point; a fine distinct lunular, dentate, outer line, followed by a reddish brown shade; a subterminal punctiform line; a dark terminal line. Underneath: primaries brown, darkest at apex. Secondaries white shaded and striated with brown on costa; dark discal points and a terminal dark line on both wings. Expanse 24 mm.

Hab.—Peru.

Stenalcidia tristaria.—Primaries: costal margin broadly light brown, otherwise dark brown, with blackish shadings on outer margin and beyond cell; faint traces of a geminate median oblique line on inner margin; terminal dark points between the veins; fringe brown. Secondaries dark brown; a fine black inner line; a geminate heavier median line; a subterminal line broken into spots towards apex; a terminal dark crenulate line. Underneath brown, the outer margins darkest. Expanse 27 mm.

Hab.—Petropolis Brazil.

This species is nearest to *Stenalcidia fusca.*

Ischnopteryx aurudaria.—Body brown, mottled with grey and greenish scales. Primaries brown, mottled with green at the base, on inner margin beyond median line, at angle, on costal margin, and beyond cell between veins 2 and 4 and 6 and 7; blackish striæ on costal margin and on veins; the inner and median lines parallel, oblique outwardly from costa, irregular; terminal dark streaks between the veins; fringe brown. Secondaries golden yellow; a black discal spot; inner margin and anal angle broadly dark brown Underneath yellow. Primaries: an oblique dark median line; a broad subapical dark shade; the apex mottled with black. Secondaries irrorated with blackish; an irregular median shade and broad subterminal dark shade on anal half of outer margin. Expanse 40 mm.

Hab.—Sao Paulo.

CARGOLIA gen. nov.

Antennæ pectinated for two thirds. Palpi porrect, not projecting beyond frons. Tibia with a single pair of spurs. Primaries: costal margin straight; outer margin oblique; veins 3 and 4 from lower angle of cell; 6 from upper angle; 7–10 stalked. Secondaries: costal margin slightly convex; outer margin hardly rounded; veins 3 and 4, and 6 and 7 on a short stalk.

Cargolia albipuncta.—Primaries black, slightly mottled with buff at base, and on outer margin between angle and vein 4; traces of velvety black basal, inner and outer lines; beyond the cell a large white spot connected to costa by a buff spot; on costa a buff median spot, and two similar spots before apex; fringe black spotted, with white between the veins. Secondaries black. Primaries: costal and post-discal spots all white; a white spot on outer margin between 2 and 4. Secondaries irrorated slightly with whitish scales. Expanse 30 mm.

Hab.—Jalapa, Mexico.

Geometrinæ.

Neagathia semilucida.—Wings somewhat transparent, greenish fawn color. Primaries: costa whitish, a small black discal spot; a brownish curved inner line nearer base on costa than on inner margin, and inwardly shaded with lilacine: an outer brownish line, nearly straight, broadly shaded with lilacine and dark grey from inner margin to vein 7. Secondaries: a larger black discal spot preceded by a transverse lilacine shade; the outer line evenly curved, dark grey, outwardly shaded with lilacine; the outer margins are striated with reddish brown. Underneath whitish, with traces of the lines and a broad black subterminal shade on primaries. Expanse 23 mm.

Hab.—Rio Janeiro.

Hydata felderi.—Wings semi-transparent, pale greenish, with wavy, inner, outer and subterminal lines; the discal spots olive-green. Primaries; a large olive-green space at the base; a large olive-green subapical spot, widest towards costa and extending to vein 3. Secondaries: a basal olive-green band; the subterminal broadly shaded with olive-green; some terminal pale green shadings. Expanse 20 mm.

Hab.—Jalapa, Mexico.

Allied to *H. caducata* Feld.

Hydata sordida.—Frons and vertex white. Thorax green. Primaries pale green, thinly scaled; costa finely whitish; inner margin brown at base and with a median dark grey spot; traces of a faint inner and outer darker green line; a subapical dark green spot from subcostal vein to vein 3, where it extends to fringe; a dark green discal spot; a small dark green spot above the inner angle. Secondaries olivaceous brown: the outer margin pale green; traces of a dark discal spot, and transverse straight outer line; a terminal darker green line. Underneath greenish white; the secondaries with a broad dark transverse band; the subapical spot on primaries forming a dark shade. Expanse 17 mm.

Hab.—Sao Paulo.

Hydata povera.—Primaries semi-transparent, pale green, with darker wavy inner, outer and subterminal lines; the latter from inner margin to vein 3, above which there is a large dark green subapical spot which extends to costa; the base of the wing dark green; a green discal spot. Secondaries dark green; a white transverse inner line; a paler green indistinct median line; outer margin

pale green. Underneath duller; the median line on secondaries more distinct. Expanse 18 mm.

Hab.—Orizaba, Mexico.

This species is figured in the Biologia as *Racheospila satisfacta* Wlk., which is, however, quite distinct.

PROHYDATA gen. nov.

Antennæ pectinated. Palpi porrect, short. Primaries: costal margin straight; apex acute; outer margin straight to vein 3, then rounded. Veins 3 and 4 apart; 6 from upper angle of cell; 7–10 stalked. Secondaries: costal margin straight; outer margin produced at vein 6, nearly straight to anal angle; veins 3 and 4 apart; 6 and 7 stalked; 8 not anastomosing with 7, as in *Hydata*, but diverging.

Prohydata apicata.—Primaries semi-transparent, pale green; a small dark green space at base; a small green discal spot; a large dark olive-green apical space from vein 3 to subcostal vein, leaving a narrow, pale green marginal space between veins 4 and 6, and a small paler green spot and streak at apex. Secondaries brown at base; a broad dark greenish grey median space, outwardly limited by a still darker grey line, and containing a blackish discal spot; the outer space brownish; the margin and fringe pale green. Underneath the secondaries are grey, with a dark transverse outer line. Expanse 21 mm.

Hab.—Chaco, Bolivia.

Prohydata vitrearia.—Primaries olivaceous; the median space between subcostal and submedian veins semi-transparent, pale green; a greenish discal spot; a small apical pale green spot. Secondaries olivaceous; a basal transverse semi-transparent line, pale green; a dark outer transverse line; the outer margins and fringe paler green. Expanse 22 mm.

Hab.—Aroa, Venezuela.

Racheospila capysoides.—Head red; vertex white. Collar and thorax green. Abdomen violaceous red above; three transverse white spots; underneath white. Wings bright green; discal spots red; a terminal red line; fringe spotted with red. Primaries: costa finely red; an inner curved white line; an outer fine white line, wavy from costa to vein 4, then slightly curved inwards. Secondaries: an outer white lunular line, ending in a large violaceous red spot occupying the median space on the inner margin. Expanse 25 mm.

Hab.—Jalapa, Mexico.

Racheospila pulveraria.—Head brown. Collar and thorax green. Abdomen green; a basal white spot surrounded with dark brown; two subdorsal white spots. Wings bright green; fringe green, spotted with brown at ends of veins. Primaries: costa buff, with thick black striæ; some brown and black scales at base; an inner, irregular, lunular, white line mottled with brown and

black scales; a large blackish discal spot connected with costa by a brownish shade; the outer line curved beyond cell, and consisting of a series of white lunules, inwardly curved, and shaded with black and brown scales; a subterminal row of black points on veins surrounded by brown scales. Secondaries: the outer line and subterminal spots much fainter, there being hardly any black scales; an inner whitish wavy line shaded with pale brown. Underneath whitish green, the primaries showing traces of the dark markings of upper surface. Expanse 23 mm.

Hab.—Songo, Bolivia.

Allied to *R. puntillada* Dogn.

Racheospila viridicincta.—Frons buff; vertex white; body buff; patagiæ green; abdomen with three dorsal white spots. Wings bright green; discal points black, shaded with buff; an outer lunular line, punctiform on veins; a terminal brown line, faintly spotted with yellow on veins; fringe white; an inner white line on primaries; costa buff, the extreme margin white. Expanse 20 mm.

Hab.—Castro, Parana.

Racheospila gortaria.—Body pale green; three subdorsal white spots circled with red on abdomen. Wings bright green; minute black discal points; an outer punctiform white line, straight on primaries, angled on secondaries; a terminal red line, spotted with yellow on veins; fringe white; an inner white wavy curved line on primaries; costa finely white. Expanse 27 mm.

Hab.—Castro, Parana.

Comibæna magnifica.—Body buff; patagiæ pale green. Primaries white; costa yellowish; the extreme margin light brown; a small green space at base followed by a large triangular green space, the base of which rests on the subcostal; an outer green space from above end of cell on subcostal to near the apex, contracting very much at vein 5, and then expanding into a broad semilunar spot not quite reaching vein 2; a subterminal brown line descends from vein 6, and curves below the green spot, and suffuses with a brown shading which fills the median space to inner margin; a cluster of darker brown scales in cell; terminal line dark brown, and fringe buff on both wings. Secondaries white, irrorated at base, and in cell with brown; a large irregular green semilunar spot on the inner margin, its point towards base acute, the other point obtuse before vein 5; a dark streak in cell, bifurcating towards costa; a subterminal brown line. Underneath creamy; the green spots of upper surface visible. Expanse 37 mm.

Hab.—Sao Paulo.

Allied to *inclusaria* H. S.

Nemoria silena.—Frons and vertex white. Body bright green. Wings bright green. Primaries: a black discal point; a faint trace of a brown outer line above the inner margin. Secondaries: a broad median pale yellow space, not quite reaching the inner margin, outwardly limited by a dentate, violaceous line, and crossed by a broad violaceous line, outwardly toothed; close to inner

margin the yellow space between the two dark lines is thickly irrorated with brown scales; the lines do not reach either margin; fringe paler green. Underneath primaries bright green; secondaries whitish green, with a black discal line. Expanse 21 mm.

Hab.—Sao Paulo.

Gelasma nordicaria.—Wings dull olive green; black discal points; a faint wavy whitish outer line, inwardly with darker green; a terminal dark line, interrupted at veins by a yellow dots; fringe greyish, spotted with brown at veins; costa of primaries finely buff, striated with dark brown. Expanse 11 mm.

Hab.—Orizaba, Mexico.

Allied to *G. hemithearia* Warr.

Phrudocentra olivia.—Palpi laterally spotted with black; frons brownish; vertex white; body green. Wings dark green; a broad whitish line from apex of primaries to middle of inner margin on secondaries; minute black discal points: fringe dark green at base, paler terminally. Underneath primaries paler green; secondaries whitish green; traces of the transverse oblique line. Expanse ♂ 21 mm., ♀ 31 mm.

Hab.—Castro, Parana.

Dyspteris vecinaria.—Wings whitish, striated with green; fringe white, spotted with black at veins. Primaries: from middle of costa a dark green line, angled at green discal shade, to inner margin at one-third from base; from costa near apex a dark green line, oblique to middle of inner margin, but bulged between veins 3 and 5: a green subterminal shade, widest on inner margin. Secondaries with a dark green median line, outwardly shaded with white. Underneath more whitish; the inner line on primaries absent, the outer line starting further away from apex. Expanse 25 mm.

Hab.—Chiriqui.

Allied to *D. naiadaria* Gn.

Dyspteris mexicaria.—Body green. Wings bluish green; fringe white; discal spots white; an outer white line, slightly wavy; a distinctly wavy subterminal white shade; an inner curved white line on primaries; costa of primaries very finely dark brown. Underneath primaries green; broad white shades in place of lines. Secondaries whitish, with median, outer and subterminal green shades; the base shaded with green. Expanse 30 mm.

Hab.—Orizaba, Mexico.

Allied to *D. abortivaria* H. S.

ACIDALIINÆ.

Craspedia cugia.—Wings whitish, irrorated with black and grey scales; minute black discal points; an oblique brownish line beyond cell on primaries; within discal spot on secondaries; a similar outer line followed by broad subterminal and terminal brown shadings; on primaries there is also a fine curved

inner line; a brown terminal line spotted with black between the veins. Underneath paler, with traces of the median and outer lines. The primaries are acute, the secondaries rounded. Expanse 21 mm.

Hab.—Orizaba, Mexico.

Craspedia bilinearia.—Wings pale buff, irrorated with light reddish brown and crossed by two fine darker brown lines; the inner line inwardly oblique; the outer line slightly bulged at vein 4; a terminal, somewhat lunular dark line; an indistinct dark median shade; discal spots large, white, circled with reddish brown; the costal margin of primaries thickly irrorated with black. Expanse 18 mm.

Hab.—Orizaba, Mexico, Loja, Ecuador.

Allied to *C. conspicillaria* Snell.

Craspedia arthura.—Head brown. Collar violaceous red. Body bright ochreous, the abdomen with subdorsal roseate spots. Wings bright ochreous, striated with roseate; discal spots roseate, broadly circled with black, which is outwardly shaded with roseate; beyond the discal spots a broad roseate transverse band somewhat mottled with ochreous beyond the cells and on costal margins, and containing a large black spot between veins 2 and 4; on the primaries this band is outwardly spotted with black on the veins; terminal roseate striæ; fringe ochreous. Underneath brown; black discal spots; outer punctiform line; a large blackish shade on primaries between veins 2 and 4. The secondaries are rounded and the species look like a *Cambogia*. Expanse 22 mm.

Hab.—Sao Paulo.

Craspedia vittora.—Head brown; collar white; thorax and abdomen pale buff, the latter dorsally spotted with black. Wings pale buff, thinly irrorated with black scales; a faint median pale brown shade angled beyond cell at costa of primaries and crossing black discal point on secondaries; discal point on primaries smaller; a wavy outer pale brown shade marked on veins by clusters of black scales; a germinate pale subterminal shade; a terminal dark line, punctiform between veins. Underneath pale buff, slightly clouded with brown; black discal points, and an outer punctiform line. Secondaries rounded. Expanse 17 mm.

Hab.—Orizaba, Mexico.

Craspedia conotaria.—Whitish buff, thinly irrorated with black scales forming a wavy median, outer and subterminal line, the outer line being somewhat punctiform on primaries; black discal point very minute; a terminal, interrupted, black line, preceded by some minute marginal points; fringe divided by an interrupted blackish line. Underneath whitish; the black discal points larger; an outer punctiform line on primaries; terminal triangular black spots between the veins. Secondaries evenly rounded. Expanse 18 mm.

Hab.—Sao Paulo.

Craspedia gosina.—Wings pale buff, thickly striated with pale brown, forming indistinct median, outer and subterminal shade; discal points usually

white, shaded with darker brown, and larger on secondaries than on primaries; the outer shade with a row of black points on veins; a terminal black line interrupted by veins; on secondaries also a dark point at end of veins; costa of primaries shaded with dark violaceous. Underneath primaries brown; secondaries white; fine median, outer and subterminal brown shades. Expanse 18 mm.

Hab.—Castro, Parana.

Belongs to the group with rounded secondaries.

Craspedia enucloides.—Wings white, with a few scattered black scales; minute black discal points; lines and fringe brown. Primaries: the costa finely pale brown; an inner, a median and an outer wavy line, angled below costa; the outer line speckled with black beyond cell and above inner margin, in which places it also suffuses with the inner part of a geminate subterminal wavy line; terminal black point between the veins. Secondaries: a median, an outer and a geminate subterminal wavy line; terminal black points between the veins. Underneath primaries pale brown, with an outer black wavy line, and a whitish subterminal shade. Secondaries white; black terminal points on both wings. Expanse 22 mm.

Hab.—Coatepec, Mexico.

Craspedia micara.—Wings pale olivaceous buff, the markings hardly perceptible; black discal points and oblique fine shade, angled below costa of primaries above end of cell, and extending to inner margin of secondaries, passing within but close to discal spot; an outer fine lunular line; a fine terminal black line interrupted by veins. Underneath the primaries shaded with light brown, except on inner margin; black discal points; the outer lunular line more distinct. Secondaries angled. Expanse 22 mm.

Hab.—Castro, Parana.

Craspedia anaisaria.—Primaries acute. Secondaries angled, light buff, sparsely irrorated with violaceous brown scales. Discal points yellow, circled with dark violaceous; an outer row of violaceous points on veins; a terminal row of black points between the veins; a faint darker shade between the discal spots and inner margins; dark points on subcostal and median veins of primaries at a third from base. Underneath primaries shaded with brown; discal spots less distinct; outer and terminal row of points. Expanse 22 mm.

Hab.—Sao Paulo.

Craspedia donaria.—Wings lilacine buff, very thinly irrorated with black scales; black discal points; a terminal row of black points; a dark shade extends from beyond cell on primaries to inner margin of secondaries, crossing the latter wing within the cell spot; traces of faint outer and subterminal shade. Underneath primaries greyish brown; an oblique dark shade beyond cell to inner margin; an outer punctiform black line. Secondaries buff, an outer punctiform line and subterminal shadings; discal spots black. Expanse 22 mm.

Hab.—Castro, Parana.

The secondaries are angled.

Hæmalea narogena.—Wings violaceous brown, with darker transverse lines. Primaries: a basal, an inner, a geminate median and an outer wavy line; a subterminal shade and the outer margin irregular darker. Secondaries: a median and an outer wavy line; a faint subterminal shade; a terminal dark line; fringe darkest at base. Underneath light brown, with traces of the median and outer lines. The species is very close to *H. taciturna* Dogn., but is brighter in color. Expanse 19 mm.

Hab.—Peru.

Hæmalea rotundata.—Body fawn color, irrorated with black scales. Primaries: basal two-thirds of inner margin dark fawn color, limited by a semicircular violaceous line starting from base of median vein; space above this to end of cell also dark fawn color, except costa which is finely violaceous; at end of cell a small white discal spot, beyond which a median violaceous shade extends from costa to the semicircular line; the outer portion of the wing violaceous except a large round apical white spot, which contains three dark terminal spots. Secondaries pale fawn color, with slightly darker irrorations; a subterminal fine violaceous line, wavy towards anal angle; the apex to vein 6 violaceous. Expanse 15 mm.

Hab.—Aroa, Venezuela.

Hæmalea astota.—Wings brown, the base much and broadly suffused with blackish scales, except on costal margin of primaries, which is a pale buff to apex; a broad median blackish shade; a similar dentate subterminal band suffusing with marginal dark blotches above the inner angle. Underneath pale brown, without markings. Expanse 20 mm.

Hab.—Aroa, Venezuela.

Hæmalea virgota.—Body whitish, vertex roseate brown. Wings white, finely irrorated with grey scales; a faint outer and subterminal greyish shade; primaries with an inner oblique but distinct shade, and the costal margin finely yellow; discal spot almost imperceptible. Underneath silvery white. Expanse 20 mm.

Hab.—Jamaica.

Hæmalea caparia.—Head brown. Collar and thorax grey. Primaries: base, costal margin and apex light grey, otherwise violaceous brown, and thinly irrorated with black scales; the dark portion is separated from the pale color by a wavy line extending from the inner margin at one-fifth from the base, obliquely and slightly wavy to the costal margin at two-thirds from base, and terminating in a brown shade on costa; from this point a white line forms a large curve to below vein 2, close to the outer margin, and is outwardly bordered with an olivaceous brown dentate shade, terminating on the finely lilacine outer margin; a terminal black line; a lilacine streak in cell. Secondaries: extreme base grey, otherwise paler brown to subterminal white wavy line, irrorated with dark brown scales; the subterminal followed by a dentate olivaceous brown shade, terminating on the lilacine outer margin; a terminal black line. Expanse 25 mm.

Hab.—Sao Paulo.

Closely allied to *Euphyra admirabilis* Obt.

Eois malvina.—Wings pale buff, with a few scattered black scales. Primaries: the costa thickly irrorated with black, its extreme edge finely brown; a faint median brown line; a black streak at end of cell; an oblique black line from costa before apex to outer margin at vein 3; outwardly shaded with violaceous grey, and enclosing a small subapical buff space; the outer margin finely black; at inner angle a small triangular violaceous grey spot; fringe reddish brown, darkest at its base. Secondaries pale buff; a black discal spot; the median and terminal line as on primaries; the latter inwardly shaded with violaceous grey; fringe reddish brown. Underneath primaries shaded with black in cell and at inner angle; the costa, veins and apex reddish brown. Secondaries pale yellow; a black discal point and some black shadings at apex; fringe reddish brown. Expanse 13 mm.

Hab.—Orizaba, Mexico.

Eois complexaria.—Abdomen white, with subdorsal black spots. Wings white, with a few black scales scattered on veins; a terminal dark brown line; fringe light brown. Primaries: costa finely reddish brown; in cell two blackish spots followed by a broad transverse black streak; below median vein two large blackish spots; a fine reddish brown line connects the discal streak and outer spot below the median vein; a wavy outer line, partly dark brown, and partly reddish brown, followed by a dark spot on inner margin, and by a subterminal wavy brown shade between veins 3 and 7. Secondaries: an inner and an outer fine reddish brown line; a reddish brown discal spot, and a few subterminal reddish brown shadings. Expanse 21 mm.

Hab.—Sao Paulo.

Eois cosymbiata.—Wings greyish brown; the outer margin violaceous, irrorated with roseate scales; black discal points; median and outer fine roseate lines; a basal and inner roseate line on primaries; the fringe greyish brown, tinged with roseate at its base. Underneath brown, with traces of a median black line. Expanse 16 mm.

Hab.—Castro, Parana.

Eois ochraria.—Body and wings ochreous, irrorated with red scales: traces of inner, median and outer lines; also a marginal shade, and a subterminal line on primaries; the terminal line and fringe violaceous red. In one of four specimens the markings are all very distinct; discal spots reddish. Underneath ochreous, with the lines as above, except the inner line. Expanse 14 mm.

Hab.—Castro, Parana.

Eois incanata.—Collar brown. Vertex and body white; the abdomen with some dorsal brown spots. Wings white, thinly irrorated with brown and black scales; a terminal black line; fringe pale brown. Primaries: an inner row of small brown spots; a median, wavy, reddish brown line, crossing a fine black discal streak; a wavy subterminal black line, interrupted between veins 2 and 3, and followed by brown semilunar spots; a few subapical brown spots; costa finely

reddish brown. Secondaries: an inner and an outer, fine, wavy, reddish brown line; a black discal point; some subterminal reddish brown blotches. Expanse 19 mm.

Hab.—Peru.

Eois cumana.—Vertex white; collar brown. Abdomen greyish, with triangular white dorsal spots. Wings white, thinly irrorated with brown scales; a wavy, fine brown, inner and an outer line; black discal points; a terminal blackish line; fringe white, spotted with brown. Primaries with the costa finely brown, and a wavy subterminal brown line. Expanse 19 mm.

Hab.—Orizaba, Mexico.

Eois maconuma.—Body brown; vertex and patagiæ white. Wings white, with a few scattered black scales; a terminal dark line, followed by spots at base of fringe; lines and discal spots orange, irrorated with black; a wavy inner line; a similar outer line; an angular and irregular subterminal shade. On primaries a median line starting from costa beyond discal point, inwardly curved within the discal spot and base; outwardly curved to vein 2, then inwardly curved to inner margin; the costa of primaries finely orange. Expanse 18 mm.

Hab.—Peru, Aroa, Venezuela.

Eois basinta.—Wings and fringe pale buff; a broad subterminal, wavy, violaceous band. Primaries with a basal, violaceous space, extending for one-third of its length on costa, and outwardly slightly curved to base of inner margin. Secondaries with a dark discal point. Underneath with the markings more reddish and discal points on both wings. Expanse 15 mm.

Hab.—Oaxaca, Mexico.

Eois boruuta.—Wings mottled white and brown, and thickly irrorated with black scales; black discal points; a fine, wavy, black, outer line; a terminal black interrupted line. Underneath greyish; discal points; an outer punctiform line. Expanse 15 mm.

Hab.—Jamaica.

Eois cocaria.—Wings and fringe pale grey, irrorated with black scales; black discal points, followed by a thick black median line, and a finer, wavy, outer line; a less distinct subterminal shade; an interrupted, faint, terminal line; on primaries a curved black inner line. Underneath the primaries are more suffused with black, and the outer line is almost as heavy as the median line. Expanse 14 mm.

Hab.—Orizaba, Mexico.

In some specimens the outer line is more punctiform. The species is allied to *E. ossularia* Hbn.

Eois penesta.—Primaries buff; a median and outer small brown spot on costa; traces of a median dark band on inner margin extending in a fine line towards vein 5; the outer margin broadly shaded with pale violaceous; terminal dark points at veins; fringe buff; a broad median transverse dark brown band;

the outer margin as on primaries. Underneath buff, shaded with roseate; darkest subterminally. Expanse 20 mm.

Hab.—Petropolis.

Eois ellima.—Primaries grey; the costa irrorated with darker scales; the rest of the wing irrorated with roseate scales; in the cell two small superposed semi-transparent spots, preceded by a yellow shade; very indistinct, inner, outer and subterminal angular lines; the outer margin narrowly and fringe yellow. Secondaries similar. Underneath luteous; the primaries shaded with roseate. Some specimens are more thickly irrorated with roseate than others. Expanse 19 mm.

Hab.—Cordova, Jalapa, Mexico.

Ptychopoda celtima.—Wings buff, irrorated with black scales; black discal points; an inner wavy and an outer lunulat black line; an interrupted black terminal line; the inner line is very close to discal spot on primaries. Underneath similar, but shaded with brown on outer margin. In some specimens the outer margin above is thickly irrorated with black scales. Expanse 13 mm.

Hab.—Orizaba, Mexico.

Ptychopoda lumaria.—Wings dull yellow; the outer margin broadly shaded with roseate; an inner and an outer wavy roseate line; dark red discal spots; on primaries the basal half of costa is roseate, and a median roseate line crosses the discal spot; a terminal row of dark red spots; fringe dull yellow. Underneath the markings are duller. Expanse 19 mm.

Hab.—Sao Paulo.

Ptychopoda paranaria.—Wings bright ochreous, thinly irrorated with reddish scales; a median violaceous line crossing the slightly darker discal spots; an outer, slightly wavy, violaceous line; a terminal darker line, interrupted by the veins; on primaries an inner, curved, violaceous line. Underneath bright yellow, the outer line more heavily marked than on upper surface. Expanse 15 mm.

Hab.—Castro, Parana.

Ptychopoda ? jugaria.—Wings grey, irrorated with brown scales; a wavy, inner and an outer dark and distinct line; a terminal, interrupted black line; on primaries a dark shade on costa extending to the black discal point. In this species the antennæ are finely ciliate. The secondaries are produced and rounded at veins 2 and 3, and there is a raised tuft of hair on costal margin below. There are very long tufts of hair on hind tibia. Expanse 17 mm.

Hab.—Jalapa, Mexico.

Ptychopoda jalapata.—Wings pale buff, irrorated with gray and black scales; a faint median shade; an outer distinct dark line; an interrupted terminal black line; a faint subterminal shade; discal spot minute on secondaries; larger on primaries, and surmounted by a dark costal shade. Expanse 16 mm.

Hab.—Jalapa, Mexico.

Ptychopoda iridaria.—Wings dark buff, irrorated with darker scales; the outer margin violaceous brown, iridescent, with terminal dark buff spots between the veins, and which are largest at apex of primaries; black discal points; a faint median line; on primaries also an inner line. Expanse 19 mm.

Hab.—Orizaba, Jalapa, Mexico.

Hyria lilliana.—Primaries: the cell and costal margin broadly olivaceous grey; two-thirds of the base of the wing, below the median vein, violaceous; the outer third from inner margin to vein 3 bright yellow, above vein 3 to apex the outer margin is narrowly yellow; a black discal spot; beyond the cell a small yellow space, and then a violaceous subterminal spot from vein 3 to vein 6; a few dark scales scattered over the wing; terminal dark points; fringe yellow. Secondaries violaceous; the outer margin yellow, slightly wider at apex than at anal angle; a wavy yellow outer line from inner margin towards apex; terminal dark points. Underneath similar but duller. Expanse 11 mm.

Hab.—Jalapa, Mexico.

In this species the primaries are acute, the secondaries rather long and rounded.

Hyria maudina.—Body violet; wings violet, with a darker inner wavy line. Primaries: the outer margin from apex to vein 3 yellow; below vein 3 a large triangular yellow space; the fringe yellow; a wavy dark outer line, outwardly shaded with yellowish from costa to vein 3. Secondaries with the outer margin broadly yellow, but narrower to anal angle; fringe yellow; terminal dark points on primaries only. Expanse 14 mm.

Hab.—Trinidad.

The secondaries are evenly rounded.

Hyria gemma.—Head and body brown; collar yellow. Wings violaceous. Primaries: the basal two-thirds of costa yellow; the outer margin finely yellow; a small triangular yellow space at inner angle; a wavy subterminal yellow line; fringe yellow, with large reddish blotches at veins 2 and 3. Secondaries: the outer margin finely yellow; a subterminal wavy yellow line; fringe yellow, with reddish blotch between veins 3 and 4; the secondaries are evenly rounded, but have the appearance of being angled on account of the dark spot on fringes. Expanse 7 mm.

Hab.—Orizaba, Mexico.

Hyria dividaria.—Primaries violaceous, becoming darker outwardly; a large yellow space occupies the outer margin, from inner angle obliquely to cell and then along vein 6 to outer margin; terminal dark points. Secondaries violaceous, becoming darker at the outer margin, which is narrowly and evenly yellow; on inner margin traces of a darker transverse line; fringe yellow. Expanse 12 mm.

Hab.—Sao Paulo.

Secondaries rather long, rounded.

Hyria ellisca.—Head and collar greyish. Thorax and basal half of abdomen dark violaceous; end of abdomen reddish brown. Primaries pale yellow; a black discal point; a few scattered dark scales: the inner margin to near angle with iridescent, violaceous scales and crossed by dark velvety brown lines; terminal dark points. Secondaries mottled with reddish brown, leaving a pale yellow streak from base and a large pale spot near the inner margin; a dark spot beyond the cell; the outer margin broadly at anal angle, mottled with violaceous; fringe yellow; terminal dark points. Expanse 15 mm.

Hab.—Sao Paulo.

Secondaries long, rounded.

Hyria violescens.—Body and wings bright violaceous; the outer margins and fringe yellow. On the primaries the violaceous projects out to fringe at vein 3, leaving the outer margin narrowly yellow to apex, and at the inner angle a small triangular yellow space. The secondaries are deeply angled at vein 4, and the outer margin is only narrowly yellow to apex; from vein 4 to anal angle the violaceous extends to the base of fringe. Expanse 18 mm.

Hab.—Jalapa, Mexico.

Hyria radaria.—Wings violaceous roseate. Primaries: the costa suffused with dark grey; a broad median yellow band on inner margin, narrowing in cell and not reaching costa; the dark shade extending between veins 3 and 4 on to fringe, which is otherwise yellow; above vein 4 the outer margin is narrowly yellow, and beyond the cell there is some yellow between veins 5 and 6; a triangular yellow space at inner angle containing a red spot. Secondaries: a broad yellow median space from costa not quite touching the inner margin; some yellow subterminal and terminal spots. Expanse 15 mm.

Hab.—Jalapa, Mexico.

Hyria afroda.—Wings deep yellow, irrorated with violaceous red scales, which are somewhat iridescent, and form a broad median band on both wings; the outer margins are broadly the same color, and are irregularly spotted with deep yellow; the fringe reddish grey. Expanse 14 mm.

Hab.—Petropolis.

Larentiinæ.

Heterusia brumalis.—Wings dark brown; the fringe spotted with white between the veins; on costa of primaries some yellowish white transverse streaks, the one beyond the cell being most conspicuous. Underneath a subapical greyish streak. The secondaries irrorated with lilacine scales; a white spot in the cell. Expanse 25 mm.

Hab.—Peru.

Heterusia acothysta.—Head, collar and patagiæ reddish brown; thorax and abdomen greyish black; palpi below and legs yellow. Wings above black, tinged with grey on basal half; some white hairs in fringe; on the primaries a large, oval, oblique white spot beyond the cell. Underneath primaries greyish

black; the costa and apex broadly reddish brown; the costa also striated with grey; the white spot as above. Secondaries reddish brown, striated with lilacine grey—especially on anal half of the outer margin. Expanse 26 mm.

Hab.—Castro, Parana.

Near *Heterusia mortipax* Butl.

Heterusia jamaicensis.—Head and collar brown. Thorax grey; abdomen grey above; reddish brown laterally. Palpi below and legs yellow Wings above black; the primaries with an oblique white band from costa to vein 2 near outer margin. Primaries underneath black, the costa narrowly, and the entire space beyond the white band reddish brown; the costa and cell striated with lilacine grey. Secondaries underneath reddish brown; a round grey spot in cell; some grey striæ chiefly at anal angle. Expanse 28 mm.

Hab.—Jamaica.

Erateina cachara.—Very similar in appearance to *Erateina pohliata* Feld. The white spot on primaries is broader, and the spot on secondaries is crossed by white veins. Underneath the species differs in having a marginal row of white spots on secondaries in place of the white line. Expanse 29 mm.

Hab.—Jalapa, Mexico.

Amaurinia peruviensis.—Head brown; vertex white; body green. Wings bluish green. Primaries: the costa finely buff, with darker spots; a fine black discal point: traces of an inner and subterminal pale line; an outer pale line more distinct; a fine terminal dark line; fringe buff. Secondaries similar, without the inner line. Underneath greenish white. Primaries with a broad dark outer shade, followed by three wavy lines. Secondaries with a faint median and outer line. Expanse 23 mm.

Hab.—Peru.

Cambogia coloraria.—Body orange; vertex white. Wings orange, crossed by numerous dull reddish, lunular lines; a black point in the cells. Primaries: a fine black basal line; a hardly perceptible black inner line, much interrupted; a black outer shade most heavily marked between veins 3 and 5, distinct from vein 2 to inner margin, consisting of small black spots above vein 5 to costa; terminal black points at veins. Secondaries with the outer black shade very irregular. Underneath fawn color, with faint traces of the markings of the upper surface Expanse 25 mm.

Hab.—Jalapa, Mexico.

Cambogia costalaria.—Head yellow; vertex white. Collar black. Abdomen yellow, with transverse reddish markings. Wings yellow, thickly irrorated with reddish, forming indistinct subterminal lines; black discal points; an outer transverse, broad, black wavy line; from discal points to outer margin along veins 4 a black streak. Primaries with the costal margin black, with a few yellow spots. Underneath luteous, with the markings less distinct. Expanse 18 mm.

Hab.—Orizaba, Mexico.

Cambogia platearia.—Wings bright yellow; the lines violaceous, irrorated with metallic scales: basal spots; the inner line geminate and present on primaries only; the median line very wavy, geminate; the outer line single, wavy, partly preceded by a straight fine line; the subterminal interrupted partly by the veins; a terminal line interrupted by the veins. Underneath yellow; the lines red, more heavily marked; the outer and terminal lines on the primaries suffusing. Expanse 19 mm.

Hab.—Sao Paulo.

Secondaries rounded.

Cambogia singularia.—Wings olivaceous buff. Primaries: a black discal point; some dark streaks on costa; an outer dark band consisting of coalescent lines, outwardly shaded with deep violaceous between veins 3 and 7, and followed to outer margin by a dark shade between veins 3 and 4; dark subterminal spots between the veins; a terminal dark line. Secondaries with a darker basal line; a black discal point, followed by three dark lines coalescing on inner margin. The secondaries are angled and denticulate. Expanse 19 mm.

Hab.—Sao Paulo.

Cambogia nacara.—Wings brown, faintly tinged with violaceous; the lines faintly darker and hardly perceptible; the most conspicuous being a fine wavy black outer line; black discal points. Underneath pale violaceous, with black discal points, and fine, outer, dark line; also a geminate basal line on primaries. The apex of primaries is acute; the secondaries slightly crenulate. Expanse 24 mm.

Hab.—Jalapa, Mexico.

Cambogia haltima.—Head ochreous red. Body violaceous. Wings dark silvery grey. Primaries: a basal and geminate inner reddish line, the latter followed by a large bright yellow spot on costa; the outer line reddish, geminate, filled in with bright yellow, especially on costa and above inner margin; a subterminal dark line, partly red, starting from a yellow costal spot. Secondaries with a narrow yellow median line broadly edged with red; an outer and a subterminal red line. Underneath primaries paler grey, with an outer yellow band. Secondaries dull yellowish, with three grey transverse lines. Expanse 20 mm.

Hab.—Jalapa, Mexico.

Cambogia hermosaria.—Vertex buff. Collar and thorax grey. Abdomen violaceous at base, then reddish above, yellow below. Primaries dark grey; the costa streaked with reddish at base, then with large bright yellow spots; an inner geminate curved line, olivaceous brown; a darker outer line; the outer margin broadly bright yellow, mottled with red. Secondaries dark grey at the base, outwardly shaded with red, and followed by a bright yellow median band; beyond this the wing is deep red; the outer margin mottled with yellow; fringe yellow. Underneath duller. Expanse 19 mm.

Hab.—Castro, Parana.

Cambogia amaryllaria.—Wings bright yellow, with black discal points. Primaries: some indistinct pale red markings at the base; an indistinct reddish outer band, terminating in a large violaceous spot on the inner margin; a subterminal violaceous band, irrorated with iridescent scales, and followed by some indistinct reddish spots; fringe yellow. Secondaries: a reddish spot at the base; a reddish median band; the subterminal band broader than on primaries and partly geminate. Underneath pale yellow, with the subterminal line narrower. Expanse 19 mm.

Hab.—Sao Paulo.

Cambogia isabella.—Primaries yellow on basal half, crossed before the black discal spot by four wavy, metallic grey lines; the outer half violaceous brown, crossed by three broader metallic grey lines; the first beyond the discal spot terminating in a black spot on the inner margin; the outer margin yellow; the fringe yellow. Secondaries yellow; a basal, median and broad subterminal violaceous brown band, irrorated with metallic grey scales; the outer margin and fringe yellow; traces of a narrow outer line on the inner margin; a black discal spot. Underneath primaries violaceous; the outer margin yellow. Secondaries yellowish, with traces of the lines as above. Black discal points on both wings. Expanse 17 mm.

Hab.—Jalapa, Mexico.

Cambogia toporata.—Primaries acute and angled at vein 4. Secondaries angled and crenulate. Primaries: base and outer margin bright yellow; the base much suffused with dark brown, and crossed by geminate lunular lines, inwardly curved; the median space paler yellow, on which the black discal point is distinct, and crossed by brown lines towards inner margin; an outer broad, brown band consisting of three lines below vein 3, and above it coalescent and extending to apex, which, together with costa, is spotted with yellow; the outer space crossed by a geminate subterminal lunular line, the lunules outwardly curved; a dark terminal line; fringe yellow, streaked with brown at veins 3, 4, 7 and apex. Secondaries marked as primaries, only the outer band consists of three lines, the inner one evenly curved, the other two lunular. Underneath pale buff; the markings indistinct. Vertex yellow. Collar dark brown; thorax yellow; abdomen yellow; basal and last segment brown; a brown spot on anal tuft. Expanse 20 mm.

Hab.—Orizaba, Mexico.

Cambogia olivaria.—Primaries pale olivaceous, mottled with yellow before inner angle and above vein 4 subterminally; faint traces of reddish outer and subterminal lines; a violaceous discal point; a crenulate terminal violaceous line; fringe yellow, brightest at its base; a violaceous spot on fringe between veins 3 and 4. Secondaries with basal half pale olivaceous; outer half yellow, on which four reddish lines are faintly visible; terminal line and fringe as on primaries; a minute discal point. The spots on fringe give the wings the appearance of being angled. Underneath the primaries are reddish; the inner margin yellow. The secondaries yellow, with transverse red lines; discal points violaceous. Expanse 21 mm.

Hab.—Sao Paulo.

Cambogia signaria.—Primaries deep yellow, shaded with violaceous red, forming a broad outer band, and narrow subterminal shade; also an indistinct inner line; the costa mottled with grey, and spotted with bright yellow; discal point black; the outer band black on inner margin and between veins 3 and 4, where it is followed by a dark shade to outer margin; a terminal row of black spots. Secondaries deep yellow, mottled with violaceous red on outer half of wing; discal point velvety black; outer band broad, also black; terminal black points. Underneath pale yellowish red; the markings less distinct. Expanse 21 mm.

Hab.—Castro, Parana.

The secondaries are evenly rounded.

Cambogia reticulata.—Wings yellow, with transverse violaceous brown lines; the three lines beyond the black discal points very close together and giving the appearance of a dark band. On the costal margin of primaries the lines are thicker and partly coalescent; vein 4 on primaries is finely streaked with violaceous to outer margin; a terminal violaceous line; fringe yellow, spotted with violaceous at veins. Underneath luteous, the markings as above, but paler. Expanse 20 mm.

Hab.—Bolivia.

The apex of primaries is rather acute, and the secondaries are slightly angled.

Cambogia denlerata.—Wings bright yellow, with violaceous brown markings. Primaries: a basal row of spots; an inner geminate curved line, interrupted by the veins; a broad shade beyond the cell, geminate on costa, followed by a geminate wavy line; a subterminal row of spots between the veins; a terminal line, interrupted by the veins. Secondaries with geminate, inner, outer and subterminal wavy, interrupted lines, and a fine interrupted terminal line. All the lines more or less irrorate with bright metallic scales. Underneath luteous, the secondaries with roseate broken lines; the primaries much suffused with roseate, especially on costal half, and with outer and subterminal yellowish lines. Expanse 19 mm.

Hab.—Bolivia.

Cambogia ? noctilaria.—Wings deep violaceous, slightly irrorated with white; a reddish brown space on primaries from vein 3 to costa, and from outer to subterminal line. Primaries: costa finely reddish brown, striated with black; an inner wavy white line outwardly shaded with reddish brown; an outer wavy white line inwardly shaded with reddish brown; a wavy subterminal white line; a dark terminal line; fringe violaceous at base, outwardly light reddish brown. Secondaries with only the outer line, less distinct than on primaries, and faint traces of the subterminal; terminal line and fringe as on primaries. Underneath primaries with the base and inner margin broadly dark grey; the apical portion light reddish brown. Secondaries lighter grey, with a pale outer line shaded on either side with darker grey and a pale subterminal line. Expanse 21 mm.

Hab.—Sao Paulo.

Pterocypha juanaria.—Primaries olivaceous; the lines thick, black; the basal and inner lines curved; the outer line sinuate, dentate, and followed by indistinct lines, and a dark space between veins 4 and 6; the submarginal line paler, lunular; a terminal black interrupted line. Secondaries dark brown; the fringe reddish, indistinct median and outer darker shades; a broken terminal black line at anal angle. Underneath flesh color; black discal spots; an outer fine black line angled on primaries at vein 4; a broad submarginal black band, widest on primaries between veins 4 and 7. Expanse 31 mm.

Hab.—Paso de San Juan, Mexico; Aroa, Venezuela.

This species can be better identified by the under surface which does not vary. The primaries above vary to the same extent as *P. defensata* Wlk.

Pterocypha rufomarginata.—Primaries olive brown, crossed by a basal, inner and outer band somewhat darker; the basal band edged on either side with black, straight; the inner band inwardly edged with black; the outer band outwardly edged with black, and is inwardly curved above and below vein 4; the outer band followed by some indistinct, dark, dentate lines; a subapical black streak; subterminal white spots from angle to vein 6; the median space containing a large black discal spot; a terminal black line; dark spots on fringe. Secondaries dark grey; the anal half of outer margin shaded broadly with red; three outer rows of fine dark lines, punctiform on veins. Underneath grey to outer line, which is broad, black and angled at vein 4; beyond, the wings are white, with broad black submarginal bands. Expanse 38–47 mm.

Hab.—Castro, Parana.

Pterocypha tabascana.—Head and thorax brown; an olive-green spot posteriorly on latter. Abdomen olive-green, with black spots posteriorly on segments. Primaries: base olive-brown; median space olive green, thickly irrorated with lilacine scales, except in cell and on costa above cell, where there is a large semilunar dark brown space; the median space is crossed by fine green, geminate inner lines, then by three annular green spots below the cell, and again by a fine green line, terminating in the dark costal space; the outer line geminate, followed by three rows of small spots on veins, all this space being also irrorated with lilacine scales; the terminal space olive-green, crossed by a subterminal white line; a terminal black line. Secondaries brown; the outer margin darkest and irrorated with lilacine; distinct traces of geminate, median and outer lines; subterminal dark shadings. Underneath pale fawn color, the outer margins broadly black; the apex of primaries and extreme outer margin of secondaries pale fawn color; a subterminal row of white spots; black discal points; three indistinct dark median lines. Expanse 39 mm.

Hab.—Tabasco, Mexico.

The underside is similar to *P. comotes* Druce.

Pterocypha chama.—Body light brown, the abdomen with darker dorsal markings. Primaries light greyish brown; the base and outer margin brown; the lines dark greyish brown; the basal space followed by two lines; the inner band consisting of three lines, the one towards the base being the heaviest; the

outer band consisting of three lines, the outer line being the heaviest, and this is followed by two wavy lines and a finely dentate line; a whitish subterminal line; a dark velvety streak from vein 6 to outer margin below apex; a terminal black line. Secondaries duller brown; geminate outer and a subterminal lighter brown line; some blackish streaks on inner margin, and dark median sagittate spots not reaching costa. Underneath whitish; black discal spots; three dark outer lines. Primaries with outer margin broadly black; a white space at apex, and subterminal whitish spots. Secondaries with a broad subterminal blackish band. Expanse 42 mm.

Hab.—Paraguay.

Rhopalista improbaria.—Primaries brown, with darker lines; a dark line at base; the basal band consisting of three lines, the last outwardly edged with grey, then followed by three fine indistinct lines, again by a buff line which is divided by a blackish line; the median band formed by three lines, suffusing on inner margin to form a dark spot; discal spot linear, dark, edged with buff; outer line triplicate, followed by a buff line, oblique from costa, outwardly curved at vein 4, then wavy to inner margin; this buff line divided by a dark line and inwardly shaded with velvety brown; subterminal line consisting of white spots above veins 4; below it lunular, brownish buff; a terminal interrupted black line and dark blotches on fringe. Secondaries dark brown; a terminal dark line, interrupted by buff spots on veins; anal fold buff, with reddish hairs. Underneath buff, thickly irrorated with black; a subterminal black band, widest from vein 4 to costa on primaries; black discal points and traces of outer line. Expanse 30 mm.

Hab.—Orizaba, Mexico.

Rhopalista vanonaria.—Primaries green, the lines olive brownish; basal line geminate, followed by a single, finer line; inner line heavy geminate, followed by two finer lines; median line thick, containing a black spot at base of vein 2; a dark cell spot; outer line thick, geminate, followed by a finer line, punctiform on veins, then by some dark spots on veins from vein 3 to costa, and again by a finer vein, geminate towards costa; subterminal dark blotches between the veins, and a paler green interrupted line; geminate black spots terminally. Secondaries blackish; a whitish spot in anal fold. Underneath: primaries blackish; a white spot at apex; inner margin whitish; traces of three dark lines beyond cell; the costa dark fawn color for two-thirds from base. Secondaries dark brownish, with faint traces of outer lines. Expanse 39 mm.

Hab.—Orizaba, Mexico.

Rhopalista repandaria.—Primaries dull brownish green, crossed by black lines; basal line geminate, followed by a fine line, sometimes also geminate; the inner band consisting of three lines, the inner one most heavily marked, the outer one usually coalescing with the outer band below the discal spot; the outer line geminate, closely followed by a heavier line, which bulges outwardly on veins 3 and 4, and is followed by a very fine line; the subterminal consisting of three lines, most heavily marked between veins 3 and 5; a terminal interrupted dark line; dark blotches on fringe at veins. Secondaries brown, almost black on

outer margin; a subterminal reddish line at anal angle; a terminal black line; base of fringe reddish. Underneath yellowish buff, the outer margin broadly black; discal spots black, conspicuous. Primaries with outer lines coalescing partly, not visible below vein 2; apex buff; some subterminal whitish spots below vein 4. Secondaries with three fine outer lines, the outer one very dentate, more heavily marked and coalescing with the central line beyond the cell. Expanse 33 mm.

Hab.—Rio Janeiro; Castro, Parana; Aroa, Venezuela; Paraguay.

Hammaptera trujillaria.—Body greenish, with black transverse lines on abdomen. Primaries with the basal two-thirds brownish, crossed by darker lines; the extreme base and an inner line pale green; the outer portion of this space projecting at vein 4 and followed by a broad green shade, limited by a lunular, geminate, black line, partly filled in and outwardly shaded with light reddish brown; traces of a still paler subterminal line, and dark terminal shadings between the veins, except between 6 and 8. Secondaries blackish brown; a fine interrupted black terminal line. Underneath blackish grey; primaries with a whitish outer band from costa to vein 4; a white terminal spot between veins 3 and 4; the apex white; subterminal white dots between the veins; a black discal point. Secondaries with a black discal point and traces of three dark outer lines; the outer margin darker, with whitish subterminal spots. Expanse 32 mm.

Hab. - Orizaba, Mexico.

Hammaptera trinitària.—Primaries light olivaceous green, mottled with white beyond the outer line and about the inner angle; an indistinct black basal line, outwardly shaded with white and followed by some brownish mottlings; the median line black, geminate, partly interrupted and shaded with darker green; the outer line black, projecting and thickened between veins 2 and 4; a subterminal whitish shade, preceded by a small black spot between veins 4 and 5; an interrupted terminal black line. Secondaries white, irrorated with black on the inner margin, where there are traces of a dark outer and subterminal line. Underneath whitish; the cell of the primaries shaded with black; a subapical black spot from costa to outer margin. Secondaries irrorated with black; outer margin black; a black outer line and discal spot. Expanse 30 mm.

Hab.—Trinidad.

Allied to *H. pallidipass* Warr.

Hammaptera subrosea.—Body green, with black dorsal spots on abdomen. Primaries green; a curved black basal line; an inner darker green shade starting from a black costal spot; the median and outer black lines meeting in the cell and forming to inner margin contiguous annular spots, edged with golden brown and filled in with greyish scales; this is followed by some darker lines, and geminate dentate subterminal black spots, irregular and incomplete; all the black markings are more or less edged with golden brown; a terminal dark line, interrupted at and between the veins; fringe green, spotted with brown. Secondaries dark blackish brown; the fringe dark roseate, spotted with black. Underneath the wings are dark roseate; black discal points; a broad black outer line; the outer margin of primaries broadly black; a subterminal

black line on secondaries; fringe dark roseate, spotted with black on primaries only. Expanse 30 mm.

Hab.—Coatepec, Mexico.

Hammaptera crocaria.—Primaries mottled brown and olivaceous; the base greenish buff; a straight black basal line, followed by a geminate, wavy, finer line; the inner line oblique to median vein, then wavy and geminate on costa and inner margin, coalescing below the cell with the outer band which is olivaceous, bordered with black and divided by a finer dark line; the outer band is wavy, not angled, and is followed by a whitish shade, thickly irrorated with pinkish buff, crossed by a dark line; a pale subterminal line, broadly shaded with black on costa at veins 4 and 5, and above inner angle; a terminal black line, interrupted by the veins; fringe spotted with black. Secondaries whitish, broadly shaded with brown along inner margin; the lines of underside showing through; a terminal dark line; some dark spots on fringes. Underneath primaries white, irrorated with black scales to outer black line; a subapical black band and subterminal black line. Secondaries white, irrorated with black: an outer and subterminal black line; discal spots distinct. Expanse 37 mm.

Hab.—Castro, Parana; Paraguay.

The primaries are very similar to *H. subguttaria* H. S.; but the secondaries and underside are very distinct.

Hammaptera halisma.—Primaries brown, crossed by fine, very indistinct darker lines; a paler basal line; a broad, wavy, whitish outer band, divided by a darker line, and outwardly shaded with olivaceous; a greyish subapical streak and some grey scales on outer margin; the subterminal line lunular, paler brown; an interrupted black terminal line; fringe brown, spotted with black at veins. Secondaries whitish, clouded with black at base; fringe and a terminal line on anal half of outer margin dark brown; fringe on apical half white. Underneath primaries blackish; a white outer band and subterminal white spots. Secondaries whitish, irrorated with dark brown scales and faint traces of median, outer and subterminal lines; discal spots distinct. Expanse 27 mm.

Hab.—Peru.

Hammaptera cocama.—Primaries white, thickly irrorated with olivaceous scales; the lines olivaceous, the basal lines coalescing; the inner band consisting of four lines; the median space whiter; the discal spot linear, very distinct; the outer band triplicate, filled in with olivaceous scales, and followed by a whitish space, which is crossed by two lines; the subterminal space above vein 4 darker, crossed by a dentate white line; dark olivaceous terminal spots on either side of veins; base of fringe buff, otherwise white. Secondaries white; a terminal dark line; dark scales on inner margin. Underneath whitish; primaries with a large apical black speck; the apical point white; dark outer shade from cell to costa; dark streaks on outer margin at veins 2 and 3. Secondaries with a terminal dark line, and some dark scales on costal margin. Expanse 33 mm.

Hab.—Peru.

Allied to *H. kirshioides* Dogn., but quite different in color.

Hammaptera geminata.—Primaries: base greenish buff; the basal band consisting of three dark brown lines, followed by a paler space, crossed by two brownish lines; the median space greenish brown; the inner and outer bands consisting each of three dark brown lines; the discal line on a paler space extending to costa; the outer band is outwardly shaded with white, followed by a greyish space on which is a pale brown line, and again a heavier blackish oblique line from costa to vein 4; the subterminal shade reddish brown, geminate, forming a large blotch between 4 and 6, and outwardly limited by an indistinct lunular pale line, beyond which there are small black spots between the veins; terminal black spots above and below veins; base of fringe reddish, with dark blotches on veins. Secondaries whitish; the inner margin and apex black. Underneath primaries whitish; the outer lines coalescing, black; a broad black band subapically, and the space between veins 2 and 4 black, leaving a white spot on outer margin. Secondaries whitish, dusted with black; apical half of outer margin black, and a black streak on inner margin. Expanse 32 mm.

Hab.—Peru.

Allied to *H. combustaria* H. S.; the outer line hardly bulging, however.

Cidaria yerba.—♂. Body green, spotted with black. Primaries dark green; a basal black band, partly geminate; an inner narrow black shade; a broad median black band, geminate on costa; a minute black discal point; an outer black line, followed by a broad black band, the outer edge of which is outwardly lunular between the veins and projects considerably between veins 3 and 4; some subterminal dark blotches partly connected by an irregular black line; a terminal black line interrupted at and between the veins; fringe green. Secondaries whitish; some dark scales along the inner margin; traces of an outer and a subterminal black line on inner margin; some dark subterminal shadings between the veins; terminal line and fringe as on primaries. Underneath primaries grey, somewhat olivaceous on costa; traces of an outer buff shade from costa to vein 3; a black discal point. Secondaries whitish, irrorated with grey; a black discal point; a faint median and indistinct outer black band; some subterminal black markings. Expanse 30 mm.

Hab.—Castro, Parana.

Cidaria adexitata.—Body green above, grey underneath. Primaries: basal third pea-green; basal triple reddish brown line, oblique from costa; other dark mottlings on costa; median space green on costa, crossed by dark veins; below costa blackish, thickly irrorated with bright reddish brown scales; terminal space pea-green, mottled with white below vein 5; before apex on costa a reddish brown shade and subterminal whitish line; an interrupted terminal dark line; fringe spotted with dark grey. Secondaries whitish, thinly irrorated with black; a black discal spot and interrupted terminal line. Underneath primaries greyish; the costa and apex somewhat olivaceous, irrorated with darker scales; a dark outer line; a dark shade from vein 4 to costa before apex; subterminal whitish spots. Secondaries whitish, irrorated with grey scales; a black discal point; traces of an outer and subterminal dark line. Expanse 30 mm.

Hab.—Bolivia.

Erebochlora chamæleonis.—Primaries olive-green, with dull brown markings; the basal line oblique from costa to inner margin; the inner band very broad to submedian vein, but narrow on the inner margin; three median lines, suffusing on costa, and the middle line very broad in the cell; an outer row of large lunular spots, inwardly edged with white near costa and inner margin, and partly suffusing with large terminal spots; a terminal row of small grey spots between the veins; fringe dark grey. Secondaries greyish, silky, brown; the base of fringe roseate between the veins. Underneath olivaceous grey; on primaries an apical white spot, and outer pinkish band from costa to vein 4; on secondaries a wavy whitish outer band and whitish spots on fringe. Expanse 40 mm.

Hab.—Bolivia.

Hydriomene musga.—Primaries olive-green, striated with black; the inner band broken into spots; dark spots along costa; traces of an outer brown line; a broad subterminal, brown, lunular line; a brown spot at apex; fringe with large black spots. Secondaries dark greyish brown. Underneath brownish grey, with darker outer and subterminal shades on both wings. Expanse 22–26 mm.

Hab.—Orizaba, Mexico.

Hydriomene caralpa.—Primaries olive-green, crossed by black striæ; an inner transverse black band slightly curved inwardly; some black spots on costa near and at apex; a terminal interrupted black line; fringe greyish brown, with dark spots. Secondaries brownish grey, darkest on outer margin; fringe grey, with dark spots at veins. Underneath grey, thinly irrorated with darker scales. Expanse 32 mm.

Hab.—Amecameca, Mexico.

Emmelesia trappa.—Primaries pale green; an interrupted fine black, basal line; a broad black inner band; a small discal spot; three fine, indistinct outer lines, rather wide apart, and the last contiguous to a black spot at vein 6, and a smaller one on costa; this last line also punctiform on veins, and sometimes followed by some black points; the terminal line paler green, hardly visible and adjoining a black spot on costa; an interrupted terminal black line; fringe greyish. Secondaries greyish, spotted with black on inner margin. Underneath dark grey, with black discal points. Expanse 23 mm.

Hab.—Castro, Parana.

Allied to *E. aguada* Dogn.

Epirrhoe niveigutta.—Body greenish brown. Primaries green; the base, inner and outer bands darker; the median space white; the base crossed by three black lines; the inner and outer bands each bordered with black and divided by a black line; these bands usually are coalescent below the cell leaving a large white space above extending to costa, and a smaller spot below on inner margin; the outer band is outwardly crenulate; a faint subterminal whitish line crossing brownish intervenal blotches; a fine black terminal line; fringe brown, with black spots. Secondaries brownish white, with traces of four crenulate

lines; a fine terminal black line; fringe pale, with dark blotches. Underneath brownish; black discal spots; traces of three outer lines on primaries; on secondaries four crenulate lines. Expanse 28 mm.

Hab.—Castro, Parana.

Epirrhœ calentaria.—Primaries lilacine grey; the base shaded with olive-green, limited by a curved line, followed by two curved wavy brown lines; the inner band broad, curved, olive-green; a black line in the cell; the outer band consisting of two olive-green lines and a black line, obliquely sinuate from costa to vein 4, then lunular to inner margin; this line is followed by a fine reddish brown line, and then by a dentate blackish line; a subterminal whitish line at apex; terminal black points; fringe light brown, with darker spots at veins. Secondaries yellowish white; terminal dark points near anal angle. Underneath yellowish white; the apical portion of primaries black; the apex whitish. Expanse 28 mm.

Hab.—Castro, Parana.

Epirrhœ albidaria.—Head, collar and abdomen brownish; thorax white. Primaries white; the bands brownish green; the basal band narrow, crossed by three darker lines; the inner and outer bands suffusing, leaving a white spot in the cell containing the brown discal spot, and two small superposed white spots on the inner margin; the inner band coalesces with the basal band on the inner margin; the inner and outer bands are crossed by darker crenulate lines; the latter band being outwardly edged with black and projecting between veins 3 and 4; the outer margin is suffused with brownish green, on which the subterminal white line is very distinct towards costa. Secondaries creamy white; a black terminal line and subterminal dark spots. Underneath yellowish white; black discal spots; on primaries four outer crenulate dark lines, and a dark subapical band from costa to vein 4, containing yellowish dots; on secondaries traces of four lines and a subterminal band. Expanse 29 mm.

Hab.—Sao Paulo, S. E. Brazil.

Phibalapteryx vittulata.—Primaries pale buff; some black spots on costa; at the base fine reddish brown oblique lines, the last outwardly edged with white, and followed by three dark brown lines; a brown median shade on which is the black discal point; two fine outer lines, followed by a broader brown line, the last outwardly edged with white, and followed by a reddish brown line, which is again followed by a row of black spots on the veins; the terminal space brownish, divided by a subterminal whitish line; a dark terminal line; fringe buff, tipped with brown. Secondaries whitish, irrorated with brown; inner and median geminate lines on inner margin; subterminal geminate lines and terminal brown shadings to apex. Underneath whitish, irrorated with brown, and with indistinct transverse lines. Expanse 20 mm.

Hab.—Bolivia.

Phibalapteryx cincta.—Primaries: costal margin reddish buff, finely edged with black and with some whitish spots; base buff, with geminate blackish lines and three light reddish brown lines, the last followed by a fine whitish line, broadly irrorated outwardly with black scales; a black discal point, followed

by a wavy brown line, beyond which the outer space is broadly reddish brown, limited by a white band, outwardly curved at costa, and inwardly curved above and below vein 4; this band is crossed by three fine dark brown lines, in part bordering it; terminal space dark grey, with a dentate, white, subterminal line; a dark brown terminal line; fringe buff, crossed by a brown shade. Secondaries whitish, thickly irrorated with dark grey; the outer white band and terminal space as on primaries. Expanse 20 mm.

Hab.—Jalapa, Mexico.

Plemyria paranensis.—Primaries greyish, crossed by brown lines; the costa pale olivaceous brown, with some white and dark brown markings; three fine oblique brown lines at the base, followed by a broader dark brown band, somewhat curved and almost touching the black discal spot; an outer, slightly wavy band, darkest from costa to vein 4, and crossed by two darker lines; this band outwardly edged with white, and followed by three fine lunular black lines; an indistinct subterminal whitish line; a terminal black line. Secondaries greyish, crossed by numerous brownish lines, most distinct on inner margin; a subterminal white line; a terminal black line. Underneath greyish, speckled with brown, and with indistinct transverse brown lines; a black discal point on primaries. Expanse 22 mm.

Hab.—Castro, Parana.

Psaliodes hieroglyphica.—Primaries: base, median spaces, a large subapical, and smaller marginal spots dark brown; the basal space limited by a white line, angled below costa; the inner and outer bands ochreous, irrorated with brown, forming indistinct lines; the median space is edged on either side by a white line, and is somewhat broken up into spots; the marginal spots are edged with white; the veins are mostly ochreous. Secondaries grey, becoming whitish at base; a subterminal row of whitish spots; fringe ochreous, spotted with brown. Primaries below grey; the veins yellowish; basal, inner, outer and subterminal whitish lines. Secondaries below yellow, irrorated with brown, forming indistinct lines. Expanse 20 mm.

Hab.—Las Vigas, Mexico.

This is the *P. nucleata* of the Biologia.

Psaliodes variegata.—Body fawn color, spotted with brown on patagiæ and anal segment. Primaries white, with broad transverse brown bands; the basal and median bands bordered with darker brown; the inner band less distinct and composed of striæ; the outer band also composed of striæ and interrupted beyond the cell; the outer margin greyish brown, suffusing with the outer band at inner angle and between veins 4 and 6; a dark terminal interrupted line, forming spots on fringe. Secondaries pale brown, with a dark discal point. Underneath: the primaries mottled dark grey and buff; the costa yellowish, with grey striæ. The secondaries white, striated with grey; a black line in cell surmounted by orange scales; a dark fine median shade; some yellow at base of costa and on inner margin. Expanse 17 mm.

Hab.—Castro, Parana.

Psaliodes purpurea.—Head and palpi above cream color; the palpi brown laterally. Collar and patagiæ brown. Thorax and abdomen greyish. Primaries violaceous brown; the costa with yellow spots; an inner irregular creamy line, bordered towards costa with dark brown; a median, slightly oblique white line, inwardly shaded with some yellow scales, and outwardly shaded with dark violaceous brown, which becomes paler towards the marginal space. An outer white line from costa to vein 6; a dark subterminal spot between veins 5 and 6. Secondaries pale violaceous brown, shaded with grey on costa; a faint pale subterminal shade. Underneath the wings are darker: a median yellowish band on secondaries and subterminal spots; a distinct black discal spot. Expanse 17 mm.

Hab.—Sao Paulo, S. E. Brazil.

Allied to *P. pallida* Schaus.

Psaliodes basiplaga.—Primaries with the basal third dark brown, otherwise greyish white; an outer pale brown shade marked by a dark spot on the costa, and followed by another brown spot on costa before apex; a terminal dark brown line; fringe dark grey. Secondaries dark grey, with a brown terminal line. Expanse 13 mm.

Hab.—Jalapa, Mexico.

Psaliodes muscosa.—Body pale greenish brown; a black streak on vertex; pale dorsal spots on abdomen; palpi outwardly black. Primaries green, with black mottlings below the cell to inner margin; costa spotted with black; black streaks on the veins at outer margin mingled with metallic scales. Secondaries greyish brown. Underneath silky grey; the costa of primaries buff, with black markings. Expanse 13 mm.

Hab.—Jalapa, Mexico.

Psaliodes pallida.—Body light brown. Primaries: the base and marginal space light brown; the median space darker, inwardly limited by a straight white line and outwardly crenulate: a subterminal velvety brown line, leaving the extreme margin dark grey. Secondaries light brown, with a darker median line. Underneath buff, irrorated with brown; a dark outer line on both wings. Expanse 18 mm.

Hab.—Sao Paulo; Castro, Parana.

Psaliodes multilinea.—Body brown. Primaries brown, crossed by four whitish inner lines, almost straight, and two outer white lines slightly oblique; a subterminal white lines, oblique from apex to vein 4, then curving outwardly; this line preceded and followed by some buff shades; a terminal dark brown line; fringe yellowish, with darker spots at veins. Secondaries whitish, shaded with brown on outer margin, the lines underneath showing through. Primaries below greyish; the costa mottled with brown and yellow; an outer and apical dark streak. Secondaries below pale buff, irrorated with brown; a discal point; outer and subterminal line. Expanse 18 mm.

Hab.—Castro, Parana.

Hyphedyle cascaria.—Primaries: costa and outer margin greyish, otherwise pale brown, with darker brown striæ, except at apex, and a submarginal spot above vein 2; the apical clear space preceded by a triangular white spot on costa, which is inwardly shaded with dark greyish, dividing into two indistinct lines, one going towards outer margin, and the other crossing the end of cell; a small white spot below the triangular white spot. Secondaries pale brown, shaded with grey on inner margin, and irrorated with darker scales on inner margin and about the anal angle. Expanse 42 mm.

Hab.—Jalapa, Mexico.

Two specimens from Aroa, Venezuela, are more greyish in tones.

Hyphedyle paularia.—Primaries grey, crossed by blackish striæ; a broader streak at end of cell from costa to vein 3; a large apical buff spot, inwardly limited by a dark line, and shaded below with reddish brown; a reddish brown space above inner angle; three subterminal brown spots; a dark brown terminal line. Secondaries white, irrorated with black along the inner margin; a broad dark marginal shade interrupted before apex. Underneath primaries brownish, with apical spot as above. Secondaries greyish brown, with darker striæ and two black submarginal spots. Expanse 35 mm.

Hab.—Sao Paulo, S. E. Brazil.

Hyphedyle albida.—Upper side white: on costa at base some black striæ. Underneath white, a black spot and striæ at base of costa, and minute apical points on primaries; on secondaries some fine striæ on costa, and two black points near inner margin. Expanse 33 mm.

Hab.—Rio Janeiro.

Ergavia druœi.

I give the name of *druœi* to the ♀ of *Ergavia calvina* Druce. Biol. Cent. Amer. Het., vol. ii, p. 79. Taf. 48, fig. 22.

Ergavia calvina belongs to the genus *Almodes*, and is positively the same as *A. terraria* Dn. The ♀ described and figured by Druce belongs to a distinct species in which the sexes are similar. The shaft of the male antennæ is thick with moderate, hairy pectinations, and belongs possibly to a new genus. According to Warren the genus *Ergavia* Wlk. is cogeneric with *Polysema* Gn.

Ergavia obliterata.—Wings brown, without the distinct black lines present in the other species, and finely striated with dark brown. Primaries with a blackish discal spot and outer wavy dark shade; some dark subterminal spots, preceded by black points on veins; terminal black intervenal points. Secondaries with three blackish median bands; a subterminal row of black spots and terminal intervenal black points. Underneath greyish roseate, irrorated with black; an outer row of black points; black subterminal marks on primaries at inner angle and between veins 4 and 6. Expanse 51 mm.

Hab.—Peru.

Polysema brunnea.—Wings brown, with the lines as in the species of *Almodes;* the discal spot large, black on primaries; small, white on secondaries. Underneath pinkish fawn color, with dark subterminal markings. The general appearance is very similar to *Almodes terraria* Gn., but the setose antennæ of the ♂ proves the species distinct. Expanse 34 mm.

Hab.—Peru.

ORTHOSTIXINÆ.

CORTIXA gen. nov.

Antennæ simple. Palpi very minute, Primaries convex before apex; outer margin oblique; inner margin straight; veins 3 and 4 apart; 6 from upper angle, 7–9 stalked; 10 and 11 stalked. Secondaries: costal margin straight; outer margin rounded; 3 and 4 apart; 6 and 7 from a point. Hind tibiæ with a single pair of spur.

Cortixa aurudaria.—Body and wings bright golden yellow; fringe black at base, grey outwardly; costal margin of primaries black; inner margin of primaries grey. Underneath the same, except inner margin of primaries, which is yellow. Expanse 19 mm.

Hab.—Peru.

NOTES ON DICHELONYCHA AND CANTHARIS, WITH DESCRIPTIONS OF NEW SPECIES IN OTHERA GENERA.

BY H. C. FALL.

The observations on the two genera above named are, as is often the case, the outgrowth of an effort toward a satisfactory arrange-

some surprise.

Taken as a whole, the genus is very homogeneous in its makeup, and in the survey of our species, which has of necessity accompanied the definition of the new forms, I have found little to add in the way of characters serviceable for classification, to those set forth by Dr. Horn in his Synopsis.

* Trans. Am. Ent. Soc., vol. v, p. 185.

† Proc. Cal. Acad. Sci., 1894, p. 396.

Polysema brunnea.—Wings brown, with the lines as in the species of *Almodes;* the discal spot large, black on primaries; small, white on secondaries. Underneath pinkish fawn color, with dark subterminal markings. The general appearance is very similar to *Almodes terraria* Gn., but the setose antennæ of the ♂ proves the species distinct. Expanse 34 mm.

Hab.—Peru.

ORTHOSTIXINÆ.

CORTIXA gen. nov.

ERRATA.

age 280, line 7, for Trantion *read* Transition.
" 281, " 2 from bottom, for later *read* latter.
" 282, " 1, omit 1.
" 282, " 7, for 1 *read* 11.
" 282, " 19, for Fuch's *read* Fuchs'.
" 283, " 2, for Fuch's *read* Fuchs'.
" 284, " 5 from bottom, for Colorada *read* Colorado.
" 285, " 18, for Benardino *read* Bernardino.....
" 287, " 9, for nebulosly *read* nebulously.
" 291, " 21, for was *read* were.
" 301, " 10, for **morora** *read* **morosa.**
" 302, " 10, omit comma between moderately and closely.
" 302, " 22, for coarse *read* close.
" 303, " 17, omit comma between moderately and deeply.
" 303, " 18, for 8.4 mm. *read* 8.14 mm.
" 303, " 22, omit comma between moderately and closely.

NOTES ON DICHELONYCHA AND CANTHARIS, WITH DESCRIPTIONS OF NEW SPECIES IN OTHERA GENERA.

BY H. C. FALL.

The observations on the two genera above named are, as is often the case, the outgrowth of an effort toward a satisfactory arrangement of my own cabinet. The loan of material from other sources has, however, permitted a much more comprehensive view than would otherwise have been possible, and I desire therefore to express my hearty thanks to all who have thus given assistance, particularly to my friends Mr. Chas. Fuchs, Dr. E. C. Van Dyke and Dr. F. E. Blaisdell, of San Francisco, and to Dr. L. O. Howard and Mr. E. A. Schwarz of the National Museum, from whose collections I received the entire material in these genera. To Mr. Frederick Blanchard and Mr. Chas. Liebeck I am indebted for notes on the LeConte and Horn collections, further reference to which will be made in the proper place.

DICHELONYCHA.

Since the Synopsis of this genus given by Dr. Horn in 1876,* it has almost entirely escaped the attention of systematists; one species only—*picea* Horn †—having been subsequently made known. New forms have, however, come to light, until the number awaiting description has become, I think, greater than in any other genus of the Scarabæidæ, with the probable exception of *Diplotaxis*. Nearly all of these new forms belong to the Pacific Coast fauna, and are either quite unknown to eastern collectors, or are mixed there with older species—usually *backii* or *valida*—so that the description in the following pages of nine species will perhaps excite some surprise.

Taken as a whole, the genus is very homogeneous in its makeup, and in the survey of our species, which has of necessity accompanied the definition of the new forms, I have found little to add in the way of characters serviceable for classification, to those set forth by Dr. Horn in his Synopsis.

* Trans. Am. Ent. Soc., vol. v, p. 185.

† Proc. Cal. Acad. Sci., 1894, p. 396.

The presence or absence of a moderately deep longitudinal groove on the pronotum has offered a ready means of dividing our species into two primary groups. The division is apparently a natural one, inasmuch as there are several concurring differences in structural details, which, although suffering some exceptions, are so constant as to be regarded as group characters. Dr. Horn has already called attention to one of these, viz.: that in the species with sulcate thorax the hind claws are very nearly simple. One of the forms described here as new (*decolorata*) is exceptional in that the posterior claws are cleft in nearly the same degree as prevails throughout the other group.

Again, in the group with sulcate thorax, the spurs of the posterior tibiæ, except in *pusilla*, are mutually equal in length in the male, and nearly so in the female, and, as a rule, are sexually modified; while in the non sulcate series the posterior tibial spurs are distinctly unequal in length and exhibit almost no sexual modi fications. The impression on the outer side of the terminal joint of the maxillary palpi, which, in the non-sulcate species, exists as an elongate oval, slightly flattened area, becomes in the sulcate species distinctly excavated. Two exceptions in each series, however, must be noted; *muscula* and *nana* having the joint distinctly impressed, while *decolorata* and *pusilla* show scarcely a trace of it.

There is usually not the least difficulty in recognizing the sexes. LeConte says "The males are more slender in form than the females, and are distinguished by the club of the antennæ being as long as the funiculus." To this Horn adds that "the abdomen viewed in profile from the side, is convex along the median line in the female and concave in the male." With the exception of *clypeata*, and possibly of *pallens* (males of which have not been seen), the above characters hold good throughout our series.

A more exhaustive examination enables me to add several other less conspicuous sexual differences which apply almost as generally, but in somewhat variable degree. In the males the eyes are usually noticeably larger and more prominent; the terminal joint of the maxillary palpi is frequently broader and more widely truncate at apex; the anterior tibiæ are less strongly produced, and the posterior thighs are more slender than in the female. The sexual difference in the last joint of the maxillary palpi is well shown in *elongata*, *subvittata*, *testacea*, *diluta* and *fuscula*, and is quite obvious in

most species with non-sulcate thorax. It, however, nearly or quite fails in *robusta*, *longiclava*, *truncata* and *picea*, in which the terminal joint is more pointed and feebly truncate in both sexes. In the species with sulcate thorax there is but little sexual disparity in this regard, the terminal joint being more slender and less broadly truncate at apex than in the sulcate series.

There is a marked tendency throughout the genus toward paleness in color; the under surface, head and thorax most frequently, the elytra more rarely, becoming partly or entirely rufous or testaceous. This tendency is more pronounced in the females, and in certain species, *fulgida* and *crotchii*, the head, thorax and body beneath are normally pale in this sex, the same parts being blackish or piceous in the males.

In antennal structure there is little variation in the genus. In the few known specimens of *picea* these organs are 8 jointed; in all others they seem to be normally 9 jointed. In the single female of *robusta* there are only eight joints, but as there are nine in the male, I suspect this may be accidental. Such accidents are not rare in the Lamellicornia, where the number of joints in the funicle is frequently subject to an individual decrease through coalescence. The antennal club in the male is normally subequal in length to the funicle, and is about twice as long as in the female; to this, however, there are three exceptions. In *clypeata* the male club is very short, not differing appreciably from that of the female; a most extraordinary fact. In *pallens* the female club is unusually long, being about equal to the funicle, a condition which is, however, in part due to the shortness of the latter; males have not been seen. In the male of *longiclava* the club is abnormally long, being sensibly equal to the basal joint and funicle combined; of this species females have not been seen.

Geographically speaking, *Dichelonycha* is widely dispersed, but the genus is essentially a northern one; or more accurately, it is nearly confined to the Boreal and Transition Zones,* which, with the exception of the highlands of Pennsylvania and a narrow strip along the Alleghany Mountains, reach their southern limits in the Eastern United States in about the latitude of New York City and the southern lake region; but which in the Rocky Mountains and Pacific regions extend entirely across the country. In the East,

* See Merriam's Life Zones of the United States.

one species only—*fuscula*—is characteristic of the Carolinian region, though several others—*subvittata*, *testacea* and *truncata* (Nebraska), and *elongata* (Kansas and Texas?)—have been occasionally found within its boundaries. In Southern California, *muscula* and *truncata* range from elevations of one thousand to six thousand feet or more, thus inhabiting indifferently both the Sonoran and Trantion Zones; while *pusilla* and *nana* (Southern California), and *picea* (Lower California) should probably be regarded as true members of the Sonoran fauna.

The following table is devised for the separation of the species now known to me. The order here is merely one of convenience, and not that which should be followed in a cabinet arrangement. The sequence of species in the notes following the table is the best I can now suggest, but, as is often the case in a linear arrangement, it is in some respects unsatisfactory.

Prothorax without a well-defined median longitudinal sulcus; the disk evenly convex, or at most with a faintly impressed median line.....1.

Prothorax rather deeply longitudinally sulcate.....7.

1. Antennæ 8-jointed; color brownish to testaceous, without metallic lustre (Lower California).....**picea.**

Antennæ 9-jointed.

Clypeal angles right, or even slightly acute.....**truncata.**

Clypeal angles more or less rounded.....2.

2. Antennal club short and equal in the sexes; clypeus strongly prolonged in front of the labrum; color black.....**clypeata.**

Antennal club much longer in the male (male of *pallens* not seen); clypeus less advanced.

Antennal club in the male as long as the entire stem.....**longiclava.**

Antennal club in the male subequal in length to the funicle.....3.

3. Terminal joint of maxillary palpi narrowed apically, the tip feebly truncate; sides of thorax as viewed from above arcuate; form very robust. **robusta.**

Terminal joint of maxillary palpi widened apically, and more or less broadly obliquely truncate; sides of thorax distinctly subangulate.....4.

4. Prevailing color testaceous, the elytra often with faint greenish or æneous surface lustre.

Head, including the eyes, distinctly more than half as wide as the thorax in both sexes.

Clypeus densely punctate and more opaque, more narrowly reflexed, the suture unimpressed; elytra with lateral darker vitta, which is more pronounced at its extremities.....**subvittata.**

Clypeus less densely punctate, shining, less narrowly reflexed, the suture deeply impressed; elytra faintly æneous, without lateral vitta. **diluta.**

Head narrower, not or scarcely exceeding half the thoracic width in the female.

Clypeus rather broadly reflexed; antennal club in the female shorter than the funicle; hind angles of the thorax distinct; sculpture of upper surface finer ..... **testacea.**

Clypeus narrowly reflexed; antennal club in the female as long as the funicle; hind angles of the thorax very obtuse; surface sculpture coarser ..... **pallens.**

Prevailing color dark; the elytra in fully colored specimens more or less brilliant green or bronze, frequently with narrow pale limb ..... 5.

5. Sexes similarly colored ..... 6.

Head, thorax and body beneath black or piceous in the male, rufous in the female; clypeal suture distinctly impressed.

Elytra finely and densely transversely wrinkled, the punctuation indistinct; basal marginal line of thorax nearly obliterated at middle; hind angles of thorax less marked ..... **crotchii.**

Elytra less densely transversely rugose, the punctuation coarser and distinct; basal marginal line of thorax more evident; the hind angles more prominent ..... **fulgida.**

6. Sides of thorax sinuate posteriorly, the hind angles prominent.

Clypeal suture unimpressed, often indistinct; surface lustre green, legs in great part pale.

Clypeus narrowly reflexed, front tibiæ tridentate ..... **elongata.**

Clypeus more broadly reflexed, front tibiæ sub-bidentate **canadensis.**

Clypeal suture deeply impressed; surface lustre bronze; legs variable. **fuscula.**

Sides of thorax feebly sinuate posteriorly, the angles distinct but obtuse; head, especially in the female, relatively smaller and narrower than in allies; elytra brilliant green, usually without pale limb; appendages normally blackish throughout ..... **backii.**

Sides of thorax not sinuate posteriorly; species small (California).

Hind angles of thorax distinct but obtuse ..... **vaga.**

Hind angles of thorax rounded and indistinct.

Clypeus more broadly reflexed; elytra green, sutural angles prominent. **nana.**

Clypeus more narrowly reflexed; elytra bronzed, sutural angles not prominent ..... **musculа.**

7. Size small; prothorax feebly sparsely punctate; spurs of hind tibiæ acute, unequal in length, but otherwise nearly similar, and not differing in the sexes ..... **pusilla.**

Size larger; prothorax coarsely but evenly punctured; spurs of hind tibiæ in the male nearly equal in length, but mutually more or less dissimilar and truncate or obtuse at tip ..... 8.

8. Outer spur of hind tibiæ in the male very much wider than the inner and distinctly contorted.

Elytra with distinct greenish lustre ..... **albicollis.**

Elytra testaceous, with piceous lateral vitta ..... **lateralis.**

Outer spur of hind tibia in the male distinctly wider than the inner, but less strongly so, and scarcely contorted ..... 9.

9. Elytra testaceous, with piceous lateral vitta, the later sometimes wanting or visible only at the apical umbone ..... **decolorata.**

1 Elytra uniformly green, or piceous, with distinct greenish or bronze lustre, the lateral margin often narrowly pale .....10.

10. Prothorax with disk in great part impunctate; elytra piceous; deeply but not conspicuously bronzed; clypeal suture broadly deeply impressed. **sulcata.**

Prothorax with disk in great part punctate..... .....11.

1. Outer spur of hind tibia in the male but little wider than the inner; elytra in the male piceous; more or less bronzed or dark green.

Clypeal suture feeble or indistinct; the elytra in the female often of a brighter green than in the male, but otherwise usually rufous or testaceous throughout .....**valida.**

Outer spur of hind tibia in the male more conspicuously wider than the inner; elytra brilliant green in both sexes..... .....**vicina.**

1. **D. elongata** Fab.

This is by far the commonest species in New England, whence it ranges north into Canada, south through New Jersey and Pennsylvania, and as far west as Kansas, though its occurrence there is very exceptional. I have seen a specimen labelled "Tex" in Mr. Fuch's collection—possibly an error. The beetles have been recorded as occurring on different species of *Salix* (Kirby), on various oaks (Bethune), on leaves of oak in May in Southern Michigan (Townsend), and on birch in June (Packard). I have taken it abundantly on pines in July in New Hampshire and Massachusetts.

2. **D. canadensis** Horn.

This species is quite unknown to me, nor do I know if there are any in collections besides the type.

3. **D. subvittata** Lec.

This species has about the same range as *elongata*, but is certainly more common farther north. I do not know that it has been taken in southern New England, nor does Smith include it in the New Jersey list. It occurs in northern New Hampshire and is common about Montreal and thence west to the Great Lakes. It is not rare at Duluth, Minn. (Daggett), and I have seen specimens from Northern Illinois, and one from Eastern Nebraska. Hamilton records it as common, especially on hazel, near Pittsburg.

It seems not to have been noticed that the inner spur of the hind tibia in the male is a little wider and obtusely rounded (subspatulate) at tip. A similar disparity exists in males of *fuscula* and *diluta*, and though subject to some individual variation, is obvious enough when a sufficient series is examined.

4. **D. diluta** sp. nov.

Mixed with *elongata* in Mr. Fuch's collection, and with *fuscula* in the National Museum collection, were specimens from Massachusetts, New York and Michigan (Detroit), which I have ventured to separate under the above name. Superficially these specimens most closely resemble very pale examples of *elongata*, and they will probably be found in most eastern collections mixed with these or possibly *testacea*. Structurally they are nearest *fuscula*, with which they closely agree in most respects. There is in *diluta*, however, no sign of the deep bronze color so characteristic of the elytra in *fuscula*, the entire insect being pale testaceous, the thorax slightly darker and the elytra feebly washed with green. The form is also a little more elongate and the elytra somewhat less coarsely punctate. The clypeal suture is rather deeply impressed, and by this means as well as by the less densely but rather more deeply punctate clypeus, it may be readily separated from *elongata*. In addition to this it may be said that in *diluta* the hind legs are entirely pale, and the inner spur of the hind tibia in the male is distinctly broader and more obtuse, becoming usually slightly dilated at apex, much as in *subvittata*. From both *subvittata* and *testacea*, *diluta* is distinguished by the impressed clypeal suture, and from the latter still further by the more narrowly reflexed clypeus, the more deeply impressed subapical marginal line of the prothorax, and the greater disparity between the hind tibial spurs. I believe the range of the species to be distinctly more northern than that of *fuscula*.

As an illustration of what may be the state of affairs in many eastern collections, I quote the following from a letter just received from my friend Mr. Frederick Blanchard, who, at my suggestion, looked through the material in the Cambridge Museum. Mr. Blanchard writes "There is a large series of *Dichelonycha elongata* in the LeConte collection, and at the end of the last row were two likely looking specimens, one of which proved to be your new species. In the museum miscellaneous unsorted specimens I found four: a pair from Virginia; 1 ♀, Lawrence, Mass.; 1 ♂, Sherborn, Mass., June 7, '91. In my own material of about two dozen specimens I could find none, but I have little doubt it occurs here." (Tyngsboro, Mass.)

5. **D. fuscula** Lec.

As has already been remarked, this is the only species in our

fauna peculiar to the Carolinian area. It has occurred as far north as Long Island (Beutenmüller), and its western and southern limits so far as recorded are Missouri and Georgia. According to Dr. Hamilton it is common near Pittsburg on biennial oak. Dr. D. M. Castle* records finding many specimens near Philadelphia on beech and oak trees; the males appearing first, the females a week or two later. He also states that specimens have been taken at Lancaster, Pa., on flowers in mid-summer. The following localities are represented in the material before me: Pennsylvania, New Jersey, District of Columbia, Maryland, Kentucky, Tennessee and Missouri.

6. **D. testacea** Kby.

Judging from the few specimens seen, this species is not a common one. It is exclusively northern in range, as the following localities indicate: Vermont, Lake Superior, Winnipeg, Montana, Nebraska.

7. **D. backii** Kby.

Nearly every genus of any complexity possesses one or more species which serve as catch-alls for everything doubtful in their vicinity. At present, about everything with brilliant elytra and dark legs passes as *backii*, and in the material which has served as the basis for these notes, no less than six species carry this label. As a matter of fact there lies between *backii* on the one hand, and *crotchii* and *fulgida* on the other, a debatable ground that is overrun with a puzzling mixture of forms that are neither typical *backii* nor yet safely referable to either *crotchii* or *fulgida*.

What I have considered the true *backii* occupies the territory north of Lake Superior and thence west to the Rocky Mountains. The color in mature specimens is always black or nearly so throughout, except the elytra which are brilliant green or purplish, rarely with golden or coppery reflections. The head is distinctly smaller relative to the thorax, and the eyes a little less prominent than in the corresponding sex of *crotchii* or *fulgida;* the clypeus is also more broadly reflexed. Specimens from Colorada, Wyoming, Eastern Washington and even Arizona and Southern California, while differing in certain details are so nearly in accord with the typical form that they must, for the present at least, be placed there.

* Ent. Student, vol. ii, p. 5.

Other specimens from Utah, now standing as *backii,* are surely not that species, the larger head and more narrowly reflexed clypeus showing them to be more nearly related to *fulgida* and *crotchii.* The elytral sculpture is intermediate between typical *crotchii* and *fulgida,* and the very few females seen do not differ in color from the males. It is quite probable that they deserve a name, but more specimens are needed before we can speak with confidence.

8. **D. fulgida** Lec.

9. **D. crotchii** Horn.

These two species are closely related, and there appear to be no characters other than those mentioned in the table by which they may be distinguished. These are quite sufficient in the case of typical specimens, but intermediates are not lacking. *Fulgida* occurs from Vancouver to Northern California and eastward to Montana and the Wahsatch Mountains of Utah. I have no positive evidence that *crotchii* has ever been taken elsewhere than in the Californian Sierras from Lake Tahoe southward to the San Benardino Mountains. As remarked under *backii,* certain Utah specimens resemble *crotchii* quite closely; they are, however, quite as near *fulgida,* and it is not unlikely that they represent a closely allied but distinct species. Specimens from the Siskiyou Mountains of Northern California are intermediate in elytral sculpture between the more typical northern *fulgida* and *crotchii;* the balance of affinities, however, lie with *fulgida. Crotchii* is found on pines during midsummer, usually at altitudes of 5000 to 7000 feet, and it is probable that *fulgida* has similar habits.

10. **D. vaga** sp. nov.

Most nearly related to *backii,* under which it would fall in Horn's table. As compared with *backii,* the present species is rather less robust, the thorax relatively smaller, the disparity between the size of the head and thorax distinctly less, the clypeus a little less widely reflexed, more squarely truncate in front, with the angles more narrowly rounded.

The color is piceous or black, often with the margin of clypeus, lateral margins of thorax, legs and antennæ testaceous; elytra varying from brilliant green, with narrow pale margin to testaceous, with greenish surface lustre. In fully colored specimens the legs

are usually piceous, the tarsi somewhat paler. The scutellum is always black, even in the palest specimens, while the antennæ are always pale, except the club, which is usually darker. The sides of the thorax are not at all sinuate before the hind angles, which are obtuse, though fairly well defined. The thoracic punctuation is evidently finer and sparser than in *backii*. Length 6.2–7.5 mm.

Hab.—California; Kaweah (4275–6000 feet), and "Tuolumne County, Mokelumne Hill" (Blaisdell). Nevada.

I have seen many specimens collected by Mr. Ralph Hopping at the first named locality, and these are to be regarded as the types. The Nevada specimens are slightly different in some minor respects, but I have little doubt of their identity.

11. **D. nana** sp. nov.

Very small, black, elytra brilliant green, with pale lateral margin. Head densely punctate, clypeus truncate, or even very faintly sinuate in front, the margin rather strongly reflexed; clypeal suture slightly impressed. Thorax small, shining, rather coarsely but usually very sparsely and somewhat irregularly punctate; sides not sinuate posteriorly, hind angles very obtuse. Elytra coarsely punctate, sutural angle subacuminate. Length 5½–6 mm.

Hab.—California; San Diego (Dunn), Poway (Blaisdell). Eight examples.

This pretty little species is the smallest in our fauna, and all specimens thus far known are from a very restricted locality. It is most nearly related to *muscula*, but appears to be distinct by its uniformly more brilliant color, smaller size, less conspicuous pubescence, more strongly reflexed clypeus, which is more squarely truncate in front, with less broadly rounded angles, more sparsely and relatively more closely punctured thorax, and by the form of the sutural angle of the elytra.

12. **D. muscula** sp. nov.

Piceous, elytra bronzed, more rarely with greenish or faint cupreous lustre; side margin narrowly pale. Head feebly but closely sculptured, clypeus faintly arcuate in front, the angles broadly rounded, margin rather narrowly reflexed, suture lightly impressed. Thorax strongly rounded at sides, which are not sinuate posteriorly; hind angles rounded, not defined; surface finely somewhat sparsely punctate, base finely margined, subapical line distinctly impressed. Elytra rather coarsely closely punctate; body throughout conspicuously pubescent. Length 5½–8 mm.

Hab.—California (Los Angeles County). Sixteen examples.

This species has been placed with *fuscula* in collections on the

authority of Dr. Horn, who seems, however, to have had some doubt of their identity, judging from the placing of the specimens in his cabinet. *Fuscula* is probably confined to the Atlantic region, and may be easily distinguished from *muscula* by the prominent hind angles of the thorax, and the obvious disparity in the hind tibial spurs in the male; a careful comparison will show numerous other differences in minor details.

13. **D. longiclava** sp. nov.

Rather robust, piceous, elytra distinctly bronzed, with rather broad nebulosly pale side margin. Head but little more than half as wide as the prothorax, densely but not deeply punctate; clypeal suture faint, not impressed; clypeus moderately reflexed, distinctly sinuate in front, the sides convergent anteriorly, the angles rounded. Antennal club (♂) very long, about one-half longer than the funicle, and fully equal to all the preceding joints combined; terminal joint of maxillary palpi slender, gradually pointed from about the basal third, the apex narrowly truncate. Prothorax nearly as wide as the elytra, widest before the middle, sides not sinuate posteriorly, hind angles obtuse, but well defined; surface closely punctate throughout and with a feeble but distinct median sulcus; basal and apical marginal lines fairly well defined. Elytra moderately strongly and closely punctate, the inner of the three longitudinal raised lines—present in many species—evident, the others barely detectable. Length 6½ mm.

Hab.—California (Sonoma County, Ricksecker).

Two males only have been seen. In both of these the antennal club is virtually destitute of the usual setæ, which sparsely clothe the external faces of first and last joints. This is possibly accidental, but the specimens are otherwise in good condition, and it is difficult to see how they could have become so completely denuded. *Longiclava* looks not very unlike *muscula*, but the resemblance is only superficial. The great length of the antennal club is not approached by any other species of the genus. A third specimen, also a male, has recently been sent me from the Cambridge Museum. It agrees completely in antennal formation with the original specimens, but has the elytra entirely pale.

14. **D. pallens** Lec.

A rare species, of which I have seen only four specimens, including the type; all females. The type is without definite locality, the other three are from the Santa Cruz Mountains, in the middle coast region of California. The small size, pale color, coarse elytral sculpture, relatively small head, with narrowly reflexed clypeus and long antennal club, make its recognition easy.

15. **D. robusta** sp. nov.

Form stout, convex; black, elytra green. Head densely, thorax and elytra rather closely uniformly punctate; clypeus rather strongly reflexed, truncate and faintly sinuate in front, sides very slightly divergent posteriorly; clypeal suture faint, not impressed. Antennal club (♂) subequal in length to the funicle; terminal joint of maxillary palpi pointed, scarcely truncate at apex. Thorax unusually large and convex, nearly twice as wide as the head and but little narrower than the elytra; sides diverging slightly from the base to beyond the middle, then more suddenly but not angularly rounded and more strongly convergent to apex; apical marginal impressed line distinct throughout; base abruptly convex from the rather fine marginal line. Subcostiform lines of the elytra feebly indicated. Legs stouter than usual. Length 8½–9½ mm.

Hab.—Oregon (Corvallis). One pair submitted by Mr. Wickham.

The above description has been drawn from the male. The female scarcely differs except in size, and in having the sides of the thorax and elytra, also the abdomen and legs, in great part testaceous. *Robusta* is most closely allied to *longiclava;* the form is here, however, more robust, the antennal club is of the usual length, and the sides of the thorax are less angulate than in any other species except *picea*. There is a very faint indication of a median impressed line on the pronotum.

16. **D. clypeata** Horn.

This species was described from a single female specimen from California, and still stands as the sole representative of the species in the Horn collection. There is a second specimen (also a female) in the LeConte collection, which differs from the Horn type very slightly in coloration, the sides of the thorax and the elytra being yellowish, the latter with the costæ darker, and with the feet piceo-testaceous, while the type is described as piceous with the elytra luteous.

On the 26th of March, 1895, Mr. Ricksecker collected at Sylvania many specimens of an entirely black *Dichelonycha*, which he writes me were "found near some spruce timber in puddles of water on a road side." Examples sent to Dr. Horn were pronounced a new species. They were all obviously of the same sex, and judging, no doubt, from the length of the antennal club, the Doctor supposed them all to be females. Mr. Ricksecker accordingly distributed his specimens with the label "n. sp;" but for some reason he has more recently sent some out as *clypeata*. Whatever prompted the change, it is a correct one, for the species is undoubtedly *cly-*

peata, as is made sure by a careful comparison with the types in the Horn and LeConte collections, made at my suggestion by Mr. Lie beck and Mr. Blanchard respectively. Oddly enough, the whole catch made by Mr. Ricksecker are males, and not females as supposed by Horn. The short antennal club, and the stout posterior thighs certainly are of the female type, but the form of the abdo men is that common to all males, and, moreover, the date of appearance would indicate the latter sex. To settle the matter definitely, several specimens were dissected, with the result as above stated. *Clypeata* is surely the most aberrant species of the genus in our fauna, differing from all others in color, in the short antennal club of the male, in the strongly advanced clypeus, and in the dilation of the latter at the sides.

17. **D. truncata** Lec.

A small species, easily recognized by the sharply angulate clypeus, which is usually a little emarginate anteriorly, instead of being rounded as is usual. The punctuation of the thorax is very fine and dense, the terminal joint of maxillary palpi widest behind the middle and narrowly truncate at tip. The elytra are normally piceous, with a more or less distinct bronze or green surface lustre, but are sometimes entirely testaceous. In distribution *truncata* ranges from the plains adjoining the Rocky Mountains on the east (Nebraska, Colorada and Montana), through Utah and Nevada to the Pacific Coast (Oregon to Southern California). It is not rare in Southern California, occurring on both sides of the Sierras from the valleys up to 6000 feet elevation. At the higher altitudes it is most frequently taken on pines.

18. **D. picea** Horn.

I have seen but two specimens, one of these being the type. In these the clypeus differs somewhat in form, but in both it is more strongly arcuate at middle than usual, and is also more sparingly punctate than in any of our other species. The 8-jointed antennæ, and the uniformly rounded (not angulate) sides of the thorax are its most notable peculiarities. The terminal joint of the maxillary palpi is slender and narrowed toward the apex. It is probably confined to the more elevated portions of the Cape region of Lower California.

19. **D. pusilla** Lec.

In well preserved specimens the pubescence is seen to be sparser or nearly wanting in several longitudinal lines on each elytron, giving a distinctly vittate appearance which is peculiar to the species. The thoracic sulcus is rather less pronounced than in the other members of the group, and the posterior tibial spurs are of the type prevailing in the species with non sulcate thorax. For these reasons I have thought best to place it at the head of the group rather than at the end, where it was left by Horn. It is common in the Southern Californian coast region from San Diego to Santa Barbara, and I have seen one example from as far north as Monterey. Wickham reports taking a single specimen at Coolidge, New Mexico. I suspect this may be an error in determination, and that his specimen is one of the varieties of *sulcata*. I have taken specimens in numbers in early June flying at dusk about the flowers of *Adenostoma fasciculata* in the foot hills near Pomona, and have also taken it at same time of day flying about rose bushes in the city itself.

20. **D. decolorata** sp. nov.

Body beneath, head, thorax, suture and lateral stripe on the elytra, black; otherwise testaceous. Head densely subrugosely punctate, vertex with rather small fusiform smooth space which does not reach the clypeal suture: clypeal suture impressed, strongly angulate; clypeus moderately reflexed, truncate, or very feebly arcuate in front, lateral angles broadly rounded, sides a little convergent anteriorly. Thorax with rather shallow median groove, surface moderately closely punctate laterally, more finely and sparsely toward the middle; basal and apical marginal lines distinct; sides obtusely angulate just before the middle, feebly sinuate posteriorly, hind angles obtuse, not at all prominent. Elytra rather finely and not densely punctate. Spurs of hind tibiæ slender, nearly equal. In the male the outer spur is, however, more obtuse at tip than the inner, while in the female there is no apparent difference in this respect, both spurs being acute. Length 9–11 mm.

Hab.—California (Santa Clara and Monterey Counties), 2 males, 3 females.

The color of this species, as above described, is that of the two males, and is almost precisely that of *lateralis*, except that in the present species there is no noticeable metallic lustre. The three females are testaceous throughout. *Decolorata* is nearest the Marin County specimens assumed to be *valida*, but is clearly distinct by the color, finer and sparser punctuation of thorax and elytra, the denser punctuation of the clypeus, more strongly angulate clypeal suture and shallower pronotal groove. The hind claws are slightly but distinctly cleft.

21. **D. valida** Lec.

As collections now stand this name is quite generally used for two or more distinct species. Unfortunately the type of *valida* was a unique female; a fact which makes its identification a matter of some uncertainty, and compels us to depend largely on the type locality (San Francisco). I received some time ago from Dr. Van Dyke several males taken by him in early spring near San Francisco (Marin County). These are all rather small (9–10½ mm.), black, with dark bottle green elytra, rather widely reflexed and nearly impunctate clypeus, clypeal suture almost obliterated, hind tibial spurs (♂) nearly equal, posterior ungues distinctly cleft near the tip. Two females were subsequently received, the first surely of this species, since it was associated with additional males of the type above mentioned, and not differing materially from them in either color or size; the other unassociated with males, larger, and showing a tendency toward paleness in thorax and legs, as is described of the original *valida*. In view of the very general variability of this sex in size and color it is probable that the species above mentioned is the true *valida*. I have also placed with it for the present Oregon specimens, which have passed as *valida*, and from which, if I mistake not, the male characters as described by Horn was taken. In these specimens there seems to be a more evident disparity between the spurs of the hind tibiæ in the male, as well as some other differences when compared with the San Francisco ones, and it may have to be given a distinct name when we have accumulated material sufficient for a thorough study. As here understood, *valida* is confined to the Coast Range from Middle California to Oregon. The Sierra species which has passed under the same name is here described as *vicina*. In the formation of the spurs of the hind tibiæ in the male it is clearly distinct from *valida* and more nearly related to *sulcata* of the Rocky Mountains.

22. **D. vicina** sp. nov.

This name is proposed for a form which passes usually as *valida*, but which I have seen labeled *sulcata* in at least one collection. It is, in fact, very closely related to *sulcata*, with which it agrees almost completely, except in the following respects: The elytra are always of a brilliant green color, the thorax is punctured over the greater portion of its surface, the clypeal suture is less deeply impressed, and the size, on the average, is a little larger. The females

are frequently rufous, except the elytra. Specimens vary in length from 9½–13 mm. It is common in the Sierras of California (Kern, Tuolumne, El Dorado and Placer Counties), being found during June and July on coniferous trees. It is at once distinguished from *valida* by the greater disparity in the size of the spurs of the hind tibiæ in the male.

23. **D. sulcata** Lec.

The smooth thorax, deeply impressed clypeal suture, form of the spurs of the hind tibiæ (♂) and the color, are the chief characteristics of this species. It occurs in the mountains of Colorado and New Mexico. Specimens from Montana (Helena) in the Hubbard and Schwarz collection, have a more numerously punctate thorax, and are possibly distinct, but are best left here for the present. The same may be said of a series of specimens recently taken by Mr. Schwarz at Winslow, Arizona. These latter are paler than typical *sulcata*, and with humeral and apical spots of darker metallic green much as exist in *subvittata*.

24. **D. lateralis** sp. nov.

Form, size and sculpture nearly as in *albicollis*. Body beneath, head, thorax, tarsi, middle and hind tibiæ (in great part) piceous; front of clypeus, mouth, palpi, antennæ and legs, except as above noted, testaceous; elytra testaceous, the suture narrowly, and the sides, except the margin, more broadly but diffusedly blackish, with faint greenish or violet reflection. Specimens not fully colored have the elytra entirely testaceous, except the humeri and apices, or the entire insect may be testaceous. Head with rather broad median longitudinal impunctate area; pubescence of upper surface sparse and inconspicuous; the elytra less evidently tricostate than in *albicollis*. Spurs of hind tibiæ of ♂ nearly as in *albicollis*, the outer much broader than the inner and distinctly twisted. Length 10.5–14 mm.

Hab.—California, Placer County (Van Dyke); Nevada (Fuchs).

The color of this species is apparently not at all due to immaturity, and is very constant in type in the eleven examples before me. None of the specimens of *albicollis* which I have examined show the well defined smooth frontal line, which is so well marked in *lateralis*.

25. **D. albicollis** Burm.

The range of this familiar species is nearly that of *elongata*. I have taken it on pines in New Hampshire and Massachusetts, where it is less common than *elongata*. Dr. Hamilton mentions its occurrence on spruce in Western Pennsylvania.

CŒNONYCHA.

C. parvula sp. nov.

Form oblong-oval, brown, moderately shining, pubescence rather plentiful. Head coarsely, closely punctate, the punctuation very shallow on the clypeus, but gradually deeper posteriorly. Clypeus broadly emarginate, the angles prominent and nearly right; clypeal suture distinct but not impressed. Thorax a little less than twice as wide as long, formed as usual in the genus, uniformly closely, and rather strongly punctate. Elytra oblong-oval, widest behind the middle; humeri distinct but not prominent, apex subtruncate; surface nearly as closely punctate as the thorax. Body beneath sparsely pubescent, the abdomen more closely and strongly punctured than usual. Length 6–7 mm.

Described from two examples of doubtful sex, collected by Dr. F. E. Blaisdell at Poway, near San Diego, California.

This species is nearest *ovipennis* in size, but is slightly smaller than that, and therefore decidedly smaller than either *rotundata* or *socialis*. It differs from all these by the closer relatively coarser punctuation both above and beneath. The general outline, and the form of the clypeus is nearly as in *socialis*. The antennæ are 10-jointed, but the 6th and 7th joints are less distinctly separated than the others. The wings are probably rudimentary.

CANTHARIS.

There are few genera of like extent in which the species are, as a rule, identifiable with greater ease and certainty than in *Cantharis*. There are, it is true, a considerable number of entirely black species, which, at long range, seem strikingly similar; but the small differences in outline or proportions of parts are very constant, and these supplemented by the pronounced sexual characters observable in the antennæ, coxæ or abdomen make their separation and recognition simple enough. But here, as elsewhere, the rule is not without its exceptions, the difficulties in this case being centered in *stygica* and *sphæricollis*. The series of *stygica* in the Horn and Le Conte collections which, at the time of their arrangement by Horn exhibited only a laudable conservatism, have gradually reached a complexity which, through their influence as standards of reference, has become general.

Not long since I received from my friend, Mr. Ralph Hopping, of Kaweah, Cal., two forms of *Cantharis*, concerning which he desired an expression of opinion. Both had been identified for him as *stygica*, but from their appearance and habits, he was convinced of their distinctness. A little investigation satisfied me that the

two forms were not only distinct, but that neither one of them was really *stygica*. This conclusion prompted an attempt at further analysis of the *stygica* complex, and as a result of my study I shall in the following pages define five species from the material at hand. Each of these is represented by a fairly good series: but after set ting these aside there still remain sundry individuals which indicate that the possibilities have not yet been exhausted. The problem is really a very difficult one, and I am by no means certain that the results thus far reached may not be modified by further experience.

There is yet no good reason to doubt the correctness of Horn's course in uniting *dolosa* Lec. and *smaragdina* Lec. with *stygica*. These forms differ very little except in color, varying from black in Washington and Oregon, through dark blue (Northern California) to a more or less brilliant green in the southern Sierras of California. The true *stygica*, as represented in Southern California by the form *smaragdina*, appears to be confined to the more elevated regions, being not rare at altitudes of 5000 to 7000 feet. The form to which I have given the name *purpurascens* is purplish or violet-black, and with rather more slender thorax and antennæ. It in habits the valleys from Kern to San Diego Counties. *Chloris* is distinguished by its comparatively slender antennæ and by the pu bescence being whitish instead of blackish as in all others of the *stygica* group. It is found in Kern and Tulare Counties, "always at about 1000 feet elevation" (Hopping). *Nigripilis* occurs in the same region, but at decidedly greater altitudes (2500–5000 feet) as I am told by Mr. Hopping. It is unquestionably a good species, differing conspicuously by the abundant pubescence of the upper surface. *Stolida* is a stouter black or greenish black form inhabiting the region about San Francisco; it is separable from the others by the form of the head, this being gradually wider behind instead of parallel.

In the case of *sphæricollis* it is quite as difficult to draw any very satisfactory lines of division. Typical *sphæricollis* inhabits the plains east of the Rocky Mountains from Dakota to New Mexico. It is greenish bronze in color and with a slightly transverse, very convex (subglobose) thorax. Specimens from the mountains of Colorado (Estes Park) are quite true to type, though blue in color; others from Eastern Washington (Spokane and Pullman), and Eastern California (Owen's Valley), the former green, the latter blue, are less shining and have a somewhat less convex thorax,

which is scarcely at all transverse; these also may, I think, be fairly considered no more than local races of *sphæricollis*.

On leaving the arid regions and passing over the mountains into the true Pacific fauna, we encounter a form, of which examples from Northern California (Shasta and Siskiyou Counties) may be considered typical, that seems worthy of a specific name; it may be called *infidelis*. In this the thorax is distinctly more elongate and less convex than in *sphæricollis*, the color is deep blue, and the size rather greater on the average. With these I have also placed a series of black specimens from the vicinity of San Francisco.

Specimens bearing the label *compressicornis* are in most collections, but in the material sent me for examination these are all *sphæricollis*. The former should be known by the strongly transverse intermediate antennal joints of the male. These same joints, as Mr. Blanchard writes me after examining the LeConte series, are distinctly concave as though fitted for clasping; a character which Mr. Liebeck has more recently verified for me in the Horn types. In *sphæricollis* the same joints are as long as wide or very nearly so.

It seems not to have been remarked that in all the species of this group (presumably—though I have not verified it in *convexa*), the front tibiæ are densely pale pubescent on the inner side in both sexes, almost throughout their length.

In view of the numerous additions and changes since Horn's most excellent Review* of the species in 1873, it has been thought worth while to embody in a single table these somewhat scattered observations and corrections. Following the table will be found brief descriptions of the forms here recognized as new.

Antennæ of male with intermediate joints either deformed or thicker than those which precede or follow. Antennæ more or less moniliform in both sexes, gradually stouter to tip in the female and not much longer than the head and thorax; longer, but never equal to half the length of the body in the male.....Group I.

Antennæ not appreciably dissimilar in structure in the sexes, though usually somewhat longer in the male; either moniliform or slender; in several species longer than half the length of the body.....Group II.

Antennæ with compressed joints; joints 5–10 subquadrate or distinctly transverse; thorax convex, somewhat globose in form; both hind tibial spurs slender and acute; front tibiæ densely pubescent on the inner side.....Group III.

* Proc. Am. Phil. Soc., 1873, p. 103.

I.

Antennæ (♂) with joints 4–6 having a prolongation from their upper side. Middle tibiæ of ♂ flattened, and near the tip somewhat contorted. Black, occiput red, with median black line. Length 25–29 mm. *Hab.*—Texas, near the Mexican border..... **cucera.**

Antennæ (♂) with the fifth joint excavated and prolonged upward at the distal end. Head (except in front) and thorax red, elytra finely scabrous. Length 20–25 mm. *Hab.*—Arizona..... **mutilata.**

Antennæ (♂) with joints 4–7 elongate-triangular, the apex slightly produced on the under side. Black, head behind the eyes and thorax, rufous. Length 18–22 mm. *Hab.*—Cape San Lucas..... **peninsularis.**

Antennæ (♂) with the intermediate joints, usually 4–7, more or less enlarged.

Pygidium of ♂ elongate and dilated at tip; head black, thorax and elytra yellow, the former with four small black spots in a transverse line, the latter with a smaller black spot at basal third, and a larger one at apical third. Length 15–20 mm. *Hab.*—Texas, near the Mexican border..... **quadrimaculata.**

Pygidium of ♂ elongate and more or less acute at tip (except *deserticola*).

Head and thorax more or less rufous; middle tibiæ of ♂ not compressed near the apex.

Thorax pentagonal, angulate at sides.

Legs black; thorax not tuberculate at sides; head orange-yellow, black between and before the eyes, rarely entirely black; thorax orange-yellow, often with a median black stripe, rarely black except the lateral angles; elytra scabrous or obsoletely reticulate. Length 10–28 mm. *Hab.*—California (San Diego to Owen's Valley), thence northward by the desert regions of Nevada to Southern Oregon. **vulnerata.**

In the var. *cooperi* the elytra are coarsely reticulate, varying to finely reticulate; it occurs in California, Oregon, Washington and Idaho.

Legs black; thorax trituberculate each side behind the lateral angles; head and thorax red, labrum and epistoma black; elytra black, coarsely reticulate. Length 25 mm. *Hab.*—Santa Margarita Island (Lower California)..... **margarita.**

Legs red, tarsi blackish; head and thorax red, elytra black, strongly reticulate. Length 23–35 mm. *Hab.*—Owen's Valley, California, to the Gila River, Arizona..... **magister.**

Thorax subtransverse, broadly rounded at sides, marked with a transverse row of four small black spots; femora red, tipped with black; tibiæ and tarsi black; elytra finely reticulate. Length 18–25 mm. *Hab.*—Arizona and New Mexico..... **deserticola.**

Color entirely black; middle tibiæ of ♂ rather strongly compressed near the apex.

Thorax subpentagonal, not angulate at sides, as wide as or slightly wider than long; joints 4–7 of ♂ antennæ enlarged, 5 and 6 largest, but 4 and 7 much larger than 8; sixth ventral of ♂ with a deep and broadly rounded emargination, the lateral angles acutely produced; pygidium sinuate before the apex, which is acutely pointed; color black. Length 15–19 mm. *Hab.*—Southern California (Poway, Warner's Ranch, Temecula)..... **morosa.**

Thorax oblong, slightly longer than wide, sides broadly arcuate in front; joints 4–6 of ♂ antennæ enlarged, 7 scarcely different from 8; sixth ventral of ♂ broadly, moderately, deeply emarginate, the lateral lobes rounded and not produced; pygidium acutely oval at tip; color black. Length 15–20 mm. *Hab.*—Southern Arizona, Lower California (San Jose del Cabo)..... **melæna.**

Pygidium of ♂ broadly rounded or truncate at apex.

Hind trochanters of ♂ with an acute spine.

Fifth abdominal segment of ♂ emarginate from side to side, lateral lobes prominent; color green, head and thorax brilliant æneous, elytra usually with strong cupreous or violaceous metallic lustre. Length 16–28 mm. *Hab.*—"Minn.;" Mont., Wyo., Colo., Kans. **nuttalli.**

Fifth abdominal segment of ♂ acutely notched at middle, lateral lobes broadly rounded; head and thorax green, elytra bluish or violet, rarely green. Length 13–18 mm. *Hab.*—Mont. and Wyo. to Wash., Oreg. and Cal..... **cyanipennis.**

Hind trochanters of ♂ without spine.

Body above glabrous or nearly so.

Antennal joints 4–7 (♀) with short erect hairs on the anterior face; color green, elytra varying to violet. Length 15–18 mm. *Hab.*—Kansas, Colorado..... **viridana.**

Antennal joints 4–7 (♂) pilose on their posterior face; color black throughout. Length 15–20 mm. *Hab.*—California (San Diego and vicinity)..... **tenebrosa.**

Antennal joints of ♂ not pilose.

Thorax as wide as long, pentagonal, sides obtusely angulate; joints 4–7 of ♂ antennæ much enlarged, 5 and 6 largest; fifth ventral of ♂ not emarginate, sixth deeply and broadly impresso-emarginate, the lateral lobes prominent. Length 15–18 mm. *Hab.*—Nevada and desert regions of Eastern California..... **ulkei.**

Thorax longer than wide, sides broadly arcuate, not in the least angulate.

Joints 3–5 of ♂ antennæ most evidently dilated; fifth ventral of ♂ deeply emarginate; black, thorax rarely in part rufous. Length 13–18 mm. *Hab.*—California (Los Angeles Co. to Mendocino Co.), Lower California..... **childii.**

Joints 4–6 of ♂ antennæ most enlarged; fifth ventral of ♂ not perceptibly emarginate; black throughout. Length 13–18 mm. *Hab.*—California (Lake, Sacramento and Tulare Counties). **funerea.**

Body above conspicuously pubescent.

Body above black, thorax coarsely punctate. Length 13 mm. *Hab.*—Colorado, Arizona..... **puberula.**

Body above in great part yellow; thorax nearly smooth, base emarginate at middle. Length 7.5–15 mm. *Hab.*—Montana to New Mexico and Arizona..... **biguttata.**

II.

Anterior tibiæ of ♂ with one spur; hind trochanters subangulate.

Elytra finely punctured, rather glossy, antennæ stout. Length 18-23 mm. *Hab.*—New Mexico and Arizona.....**gentilis.**

Elytra scabrous, subopaque, antennæ slender. Length 12-23 mm. *Hab.*—Southern California to Sacramento and Owen's Valley.

mœrens.

Anterior tibiæ of ♂ with two spurs.

Outer spur of hind tibiæ short, stout, broader and concave at tip.....1.

Outer spur rather slender, laminate at tip.....2.

1. Elytra black, finely scabrous: hind trochanters of ♂ with an acute spine on the posterior edge near the tip.

Thorax more elongate, entirely black. Length 18-23 mm. *Hab.*—Southern California.....**insperata.**

Thorax broader, subpentagonal, red, with a large basal spot and narrower apical margin black. Length 11-21 mm. *Hab.*—Southern California (Kern Co.), "Washington" (Fuchs).....**molesta.**

Elytra reticulate; hind trochanters of ♂ not spined.

Thorax rather coarsely numerously punctate; elytra coarsely reticulate; color black throughout. Length 11-25 mm. *Hab.*—Kansas, Colorado, New Mexico.....**reticulata.**

Thorax nearly smooth.

Head (except in front), thorax and basal margin of elytra red; elytra coarsely reticulate. Length 15-17 mm. *Hab.*—Arizona.

agrestis.

Head black, with large yellow frontal spot; thorax black, sides bordered with red; elytra black, finely reticulate. Length 17-20 mm. *Hab.*—Texas.....**cribrata.**

Elytra fulvous or luteous.

Head and thorax black. Length 15-25 mm. *Hab.*—Colorado, Texas.

fulvipennis.

Head, thorax and elytra luteous. Length 12-20 mm. *Hab.*—Texas.

dichroa.

2. Antennæ moniliform, scarcely longer than the head and thorax; black, occiput red, with narrow median black line; elytra obsoletely scabrous. Length 12.5-19 mm. *Hab.*—Southern California.

occipitalis.

Antennæ slender, usually as long as or longer than half the body.....3.

3. Thorax as wide as or wider than long; not or scarcely narrower than the head.....4,

Thorax longer than wide and more evidently narrower than the head.....7.

4. Head and thorax black, or of the same color as the elytra.....5.

Head or thorax, or both, more or less yellowish red (except *difficilis*).....6.

5. Hind trochanters of ♂ subangulate beneath; black, without lustre. Length 12-23 mm. *Hab.*—California (San Diego Co. to Lake and Plumas Counties).....**incommoda.**

Hind trochanters of ♂ oval.

Pubescence sparse, blackish, elytra usually with at most a few scattered erect hairs, which are more noticeable toward the base.

Antennæ (♂) stouter, outer joints more oval, usually distinctly less than twice as long as wide.

Head broader, subtriangular, the sides a little divergent behind; form stouter, the legs shorter and less slender; third antennal joint relatively more elongate; color dull black, rarely greenish black. Length 8–14 mm. *Hab.*—California (San Francisco)...**stolida.**

Head quadrate, sides parallel behind the eyes; form less robust; legs rather longer and more slender; third antennal joint less elongate; color varying from black through blue to a more or less brilliant green. Length 9–14 mm. *Hab.*—California, Oregon, Washington.....**stygica.**

Antennæ (♂) more slender, joints 3–11 more than twice as long as wide, the outer joints more cylindrical; color black, elytra with faint purplish or violet lustre. Length 7–14 mm. *Hab.*—Southern California.....**purpurascens.**

Pubescence short, sparse, whitish throughout; antennal joints more parallel and elongate than in *stygica;* color brilliant green. Length 7–12 mm. *Hab.*—California (Kern and Tulare Counties)...**chloris.**

Pubescence black, moderately long and very conspicuous; black, elytra bluish black. Length 8–14 mm. *Hab.*—California (Tulare and Tuolumne Counties).....**nigripilis.**

6. Occiput red, thorax and elytra dark bluish green; surface with well-marked pale pubescence. Length 8–15 mm. *Hab.*—California (Middle and Southern); Lower California.....**auriculata.**

Head and elytra brilliant viridi-æneous, thorax reddish yellow, with median metallic green spot. Length 8–10 mm. *Hab.*—California ("Millerton").....**refulgens.**

Head behind the eyes, and thorax, red; elytra dark green. Length 8–12 mm. *Hab.*—Southern California.....**æneipennis.**

Head greenish black; thorax red, elytra dark green. Length 8–10 mm. *Hab.*—California (San Diego).....**crotchii.**

Body black throughout, without lustre; head coarsely punctate; antennæ more slender, thorax smaller and more narrowed behind than in *stygica* or *stolida.* Length 10–12 mm. *Hab.*—California (San Diego).....**difficilis.**

7. Color above reddish testaceous, "elytra sometimes black." Length 13–18 mm. *Hab.*—Southern California. Lower California....**nitidicollis.**

Color entirely black. Length 10–16 mm. *Hab.*—Southern California. **lugens.**

Head and thorax viridi-æneous, elytra violaceous or cupreous. Length 7–12 mm. *Hab.*—California (Sacramento to Tulare Co.)..**rathvoni.**

III.

Anterior tibiæ of ♂ with two spurs.

Antennæ moderately compressed, intermediate joints (♂) not or scarcely wider than long; scutellum rather deeply sulcate.

Thorax very convex, as wide as or somewhat wider than long; color green or blue. Length 8–13 mm. *Hab.*—Dakota and Kansas to Eastern Washington and California.....**sphæricollis.**

Thorax less convex, a little longer than wide; color deep blue or black. Length 8-15 mm. *Hab.*—Pacific Coast region from Washington to San Francisco ..... **infidelis.**

Antennæ of ♂ very strongly compressed; joints 5-10 about twice as wide as long; scutellum feebly sulcate. Length 8-12 mm. *Hab.*—California (Owen's Valley) ..... **compressicornis.**

Anterior tibiæ of ♂ without terminal spurs; anterior femur of ♂ with spine near the base. Length 12 mm. *Hab.*—Texas, Colorado. **convexa.**

C. peninsularis sp. nov.—Black; head (except anteriorly) and thorax red, surface feebly shining. Head quadrate, parallel behind the eyes, sparsely finely punctulate. Thorax slightly narrower than the head, subpentagonal with the side angles broadly rounded, disk flattened with four rather feeble impressions, the lateral ones usually distinct, the basal and apical ones nearly obsolete; punctures very few and fine. Elytra finely scabrous, a little smoother at base. Lower surface finely, moderately closely punctulate and pubescent, the metasternum—except along the median line—and the coxæ and basal parts of the femora with denser and longer pubescence than usual. Tarsi slender; hind tibial spurs very unequal, the outer stout, cylindrical, broader at apex, which is obliquely truncate and concave.

Male.—Antennæ longer and more slender, joints 4-10 triangular shorter, 4-7 produced a little at the apex on the lower (inner) side, their inferior outline thereby distinctly arcuate; eleventh joint very narrow and pointed, about as long as the seventh; fifth ventral broadly emarginate, sixth acutely and rather deeply notched; pygidium rounded at apex.

Female.—Antennæ shorter, relatively stouter, joints 4-7 not modified; fifth ventral truncate, sixth with a small subtriangular emargination. Length 18-22 mm.

Hab.—Cape San Lucas, Lower California.

This species was given me several years ago by Mr. Fuchs as *mutilata*. The latter has quite different male antennæ, the head is widened behind, the pubescence of the lower surface is shorter and the tarsi stouter. In the female the antennal joints are rounded in *mutilata*, and more elongate and subtriangular in *peninsularis*. The male ventral characters are also quite different.

C. margarita sp. nov.—Head and thorax red, labrum and epistoma black, elytra black, coarsely reticulate. Head and thorax sparsely punctate, the latter strongly angulate at sides and with three acute tubercles along the side margin posteriorly. Outer spur of hind tibiæ very much broader than the inner one and thinned or laminate from the base. Length 24 mm.

The single example is a male having the fifth ventral sinuate, and the sixth with a shallow emargination which is very obtusely angulate at bottom. The antennæ are scarcely perceptibly thickened at middle, and for this reason the species would perhaps be more appropriately referred to Group II. It is, however, so much like

cooperi and *magister* in general facies that it would surely be placed near them in a cabinet arrangement; in fact the specimen here described had been labeled *cooperi* by Mr. Fuchs, in whose collection the type remains. In addition to the sculpture of the head and thorax, the greater difference in the size of the hind tibial spurs, and the sexual differences of antennæ and abdomen, *margarita* is further distinguished from *cooperi* by the head not being sinuate behind and by the much stouter less compressed tibiæ. The type is from Santa Margarita Island, Lower California.

C. morora sp. nov.—Black, glabrous, shining. Head and thorax polished, with very few fine scattered punctures, elytra finely scabrous. Antennæ (♂) a little longer than the head and thorax, with joints 4–7 much enlarged, 8–10 subglobular, the eighth a little elongate. In the female the antennæ are shorter and gradually incrassate as usual. Head quadrate; thorax as wide as long, subpentagonal, with side angles rounded; disk quadri-impressed, the lateral impressions sometimes obsolete. In the male the middle tibiæ are distinctly compressed near the apex; the fifth ventral is distinctly sinuate at middle, the sixth with a broad deep rounded emargination, the lateral lobes acutely prominent. The outer spur of the hind tibiæ is obviously stouter than the inner, but the difference is not as strongly marked as in many species. Length 15–19 mm.

Hab.—California, San Bernardino, Riverside (Temecula) and San Diego (Warner's Ranch, Poway) Counties. Collections of Dr. Blaisdell and Mr. Fuchs.

C. funerea sp. nov.—Black, glabrous; head and thorax shining, nearly impunctate; elytra feebly but not very finely scabrous, somewhat shining. Antennæ (♂) a little longer than the head and thorax, joints 4–6 enlarged, the 3rd and 7th also a little dilated, 8th a little narrower than the seventh and slightly elongate, 9th and 10th about as wide as long. In the female the antennæ are rather shorter than the head and thorax and gradually stouter, the outer joints about as wide as long. Thorax a little narrower than the head, suboval, sides broadly rounded, a little more strongly so in front; disk moderately and nearly evenly convex, with a feebly impressed or subobsolete median line. Legs slender, anterior tibiæ of ♂ with two spurs, outer spur of hind tibiæ stouter than the inner, broader and concave at tip. Fifth ventral (♂) truncate, sixth broadly arcuately emarginate, the lateral lobes slightly prominent; pygidium rounded at apex. Length 13–18 mm.

Hab.—California, Lake, Sacramento and Tulare Counties.

One ♂ in Dr. Van Dyke's collection, and 2 females submitted by Mr. Fuchs are all I have seen of this species. It resembles several other black species in a superficial way, but is easily separated from all others by the form and sculpture of the thorax, combined with the sexual characters of the antennæ and abdomen. Its nearest

allies appear to be *childii* and *melæna,* from both of which the characters given in the table readily separate it. In *childii* the antennæ are obviously longer in both sexes.

C. agrestis sp. nov.—Head and thorax red, the former black in front, surface polished and very sparsely finely punctulate; elytra black, basal margin red, surface coarsely reticulate and subopaque. Head parallel behind the eyes. Antennæ a little longer than the head and thorax in the female, joints elongate-oval or subelliptical; a little longer and slightly stouter in the male. Thorax as long as wide, slightly narrowed behind, more strongly so in front, sides arcuate. Body beneath black, moderately, closely, finely punctate, with short black pubescence. Legs rather slender. Fifth ventral (♂) rather feebly sinuate at middle; sixth with a small triangular emargination, which is about as deep as wide. In the female the fifth ventral is truncate, the sixth subsinuate at apex. Tibial spurs as in *reticulata.* Length 15–17 mm.

Hab.—Arizona. Two males and one female in the National Museum collection. Probably most nearly related to *cribrata,* specimens of which I have not seen. The latter is said to have the elytra finely reticulate, which is not the case in *agrestis,* and there are differences in coloration.

C. stolida sp. nov.—Rather robust, black, or more rarely greenish black, head somewhat shining, thorax and elytra dull. Head subtriangular, evidently broader behind, punctuation rather coarse, moderately coarse at sides, sparser at middle; frontal spot present. Antennæ of ♂ scarcely passing the middle of the elytra, joints oval, 4–10 not more than one half longer than wide; third but little shorter than the fourth and fifth united. Thorax nearly as in *stygica.* Elytra finely scabrous, almost without pubescence. Fifth ventral of ♂ feebly sinuate, sixth acutely notched and longitudinally impressed, the lateral lobes broadly rounded. Length 8–14 mm.

Hab.—San Francisco.

This species is certainly near the black Oregon and Washington forms which constitute the typical *stygica.* Its more robust form, somewhat shorter and stouter legs, the evidently divergent tempora, and the relatively longer third antennal joint seem to me sufficient cause for its separation. I take this course with more confidence, inasmuch as specimens sent to Mr. Blanchard and compared by him with the LeConte types, seemed to him clearly distinct.

C. purpurascens sp. nov.—Rather slender, black, with faint purplish or violet lustre, which is more conspicuous on the elytra. The color is very constant in the ten examples before me. The thorax is somewhat more elongate than in *stygica,* the pubescence more evident, though sparse, and the antennæ (♂) are evidently more slender, joints 3–11 —except possibly the tenth—being more than twice as long as wide. Length 7–14 mm.

Hab.—California.

This species occurs at low elevations in Los Angeles County (Pasadena) and at Riverside, also in Kern County.

C. chloris sp. nov.—Brilliant green, elytra more roughly scabrous and opaque than in the green and blue forms of *stygica* (*smaragdina* and *dolosa*); pubescence whitish throughout, but sparse and inconspicuous above. Antennæ slender, the outer joints (♂) more nearly cylindrical and fully twice as long as wide. Length 7–12 mm.

Hab.—California.

I have seen numerous specimens collected in Kern and Tulare Counties.

C. nigripilis sp. nov.—Black, elytra blue-black. Head and thorax polished, moderately punctate, elytra dull, scabrous, pubescence black, erect, and far more abundant and conspicuous than in any of the other forms that have passed as *stygica*. Antennal joints 8–10 subcylindrical, scarcely twice as long as wide, 11th joint suddenly and very acutely pointed. Fifth ventral segment (♂) broadly, moderately, deeply emarginate and broadly impressed. Outer spur of hind tibiæ less slender than in *stygica*. Length 8–4 mm.

Hab.—Sierras of California, from Tulare to Tuolumne Counties.

C. difficilis sp. nov.—Black, head feebly shining, with small frontal pale spot; thorax and elytra subopaque, the latter nearly glabrous. Head quadrate, parallel behind the eyes, coarsely, moderately, closely punctate. Antennæ (♂) slender, passing the middle of the elytra; joints 3–10 nearly equal in length and very slightly increasing in width, the tenth twice as long as wide. Thorax distinctly narrower and smaller than the head, slightly transverse, sides rounded in front, then nearly straight and distinctly convergent to base; disk feebly convex and sparsely but not very finely punctate. Elytra nearly twice as wide as the thorax, parallel, rather finely scabrous. Length 10–12 mm.

Hab.—California, San Diego.

Described from eight examples collected by Dunn in March and April. The antennæ are shorter in the female as is usual. In the male the fifth ventral is broadly sinuate, the sixth triangularly emarginate, the emargination nearly as deep as wide and with the angle at bottom narrowly rounded. Spurs of hind tibiæ nearly as in *stygica*. *Difficilis* is in most points of structure closely related to *stygica*, but may be distinguished from black forms of the latter by its rather more depressed form, smaller thorax and more slender male antennæ.

C. infidelis sp. nov.

A detailed description of this species is unnecessary, the only differences of note between it and *sphæricollis* being those already mentioned in the table.

C. cooperi.

This form has long stood as a variety of *vulnerata,* and is left so in the preceding table, though I believe this reference to be open to doubt. In all the specimens of *cooperi* that I have seen there is an almost entire lack of the black thoracic stripe which is usual in *vulnerata;* the elytra are coarsely reticulate, and the middle and hind tibiæ of the male more strongly dilated than in any males of *vulnerata* that have come under my notice. From Horn's paper there should be intermediates in elytral sculpture, but I have not as yet seen such. *Cooperi* is much more northern in range.

LEPTOGENIUS.

L. virginicus sp. nov.—Rufotestaceous, elytra, except at base, and fifth abdominal segment more or less infuscate. Upper surface densely, rather coarsely sculptured, opaque; abdomen beneath more finely and less closely punctate, somewhat shining. The cephalic sculpture consists of contiguous shallow variolate punctures which are coarser beneath than above. The punctuation of the thorax and especially of the elytra is deeper and clearly defined, but appears slightly rugose. The head is slightly shorter than the elytra, the latter a little longer than wide, and equal in length to the first four abdominal segments. Length 1.7-1.8 mm.

This species appears to conform perfectly to Casey's generic diagnosis and must be very close to his *brevicornis;* in which, however, the sculpture is said to be granulose; the elytra are quadrate and (judging from the figure) shorter than the head, and evidently shorter than the first four segments of the abdomen. Of the three examples before me two are males, both having the sixth ventral formed as described by Casey of *brevicornis.* In the single female the apex of the sixth segment is very distinctly broadly angulate. In *brevicornis* the same segment is said to be extremely feebly angulate. My specimens were given me by my friend Mr. W. D. Richardson of Fredericksburg, Va., who very generously donated half his catch. They were all sifted from the refuse underlying a pile of decaying fruit in August.

MYCETINA.

M. endomychoides sp. nov.—Elongate-oval, less convex than *M. perpulchra,* and with the sides of the elytra less rounded. Head and thorax black, elytra rufous, each with two discoidal black spots, the anterior one smaller, obliquely oval, the posterior one large, truncate in front, beginning at the middle and terminating about two-fifths of its own length from the apex. Antennæ rufous; legs and under surface inclining to piceous. Punctuation both above

and beneath sparse and fine, the punctures separated as a rule by from two to three times their own diameters. Pubescence of upper surface fine, sparse and inconspicuous, more evident beneath. Prothorax nearly twice as wide as long, sides parallel, narrowed in apical third, feebly sinuate behind, the hind angles a little acute; sides strongly margined; disk feebly convex, longitudinal impressed lines deep, arcuate, reaching about to the middle; transverse sub-basal impressed line as usual. Elytra very slightly wider at base than the thorax and nearly four times as long; sides broadly arcuate, surface faintly rugulose and less shining than the thorax; sutural stria very fine, but evident toward the apex. Length 4 mm.

Hab.—California, Lake Tahoe and Kaweah—one example from each locality.

The few species which we now refer to *Mycetina* (I have not seen *limbata*) exhibit somewhat notable differences, especially in oral and sternal structure, the importance of which cannot be determined until the family has been subjected to monographic treatment. *Perpulchra* and *hornii* are certainly congeneric. In them the terminal joint of the maxillary palpi is elongate-conical and scarcely as wide as the second joint; the terminal joint of the labial palpi subquadrate and squarely truncate at apex; the last joint of the antennæ not longer than the tenth; the prosternum with deep impressed marginal lines which unite at the apex; mesosternum transverse, narrowed in front. While closely allied, they may readily be separated by the form of the thorax—more narrowed in front in *perpulchra* and the difference in the modification of the male tibiæ *Testacea* differs very conspicuously from the two preceding by the abundant pubescence; the second joint of the maxillary palpi is not wider than the terminal joint; the labial palpi are smaller, the last joint slender and narrowed apically; last joint of antennæ longer than the tenth; prosternum more parallel and not margined; mesosternum slightly longer than wide, the sides parallel. In *endomychoides* the last joint of the maxillary palpi is oval pointed and much stouter than in the preceding species; the labial palpi are smaller, but apparently formed nearly as in *perpulchra* and *hornii;* the last antennal joint longer than the preceding; the prosternum is not margined posteriorly; the mesosternum is quite strongly transverse, the sides parallel, the front angles narrowly rounded. The femora are less clavate than in either of the other species, being more like *Endomychus biguttatus* in this respect, as it also is in the form of the mesosternum and in coloration.

CORYMBITES.

The two species made known below are sufficiently conspicuous to permit their description in an isolated manner. It is to be hoped that the genus may receive a thorough and much needed revision in the near future.

C. mirabilis sp. nov.—Black, elytra ferrugineous brown, vestiture of upper surface dense, sericeous, reddish orange in color, the hairs lying in such directions as to present the appearance of darker bands and spots. As viewed perpendicularly from above they are as follows: the entire posterior half of the prothorax, except for a median transverse row of four small spots; and the front margin, except the angles; on the elytra three transverse bands—a broader irregular sub-basal one, a narrower one slightly post-median, and a smaller one before the apex, all narrowly interrupted at the suture. Antennæ reaching the base of the prothorax, second joint scarcely more than half the length of the third, the latter triangular and nearly as long, but narrower than the fourth; joints 3–11 subequal in length, the middle ones slightly wider and nearly as wide as long. Prothorax as wide as long, sides strongly rounded and deeply sinuate before the hind angles, which are strongly divergent, acuminate, and finely carinate; surface densely, finely punctate. Elytra very slightly wider at base than the thorax, a little wider behind, finely striate, striæ punctate, interspaces finely punctulate but not rugose. Beneath sparsely clothed with short brownish hairs. Prothoracic flanks rather coarsely and densely punctate, otherwise finely not closely punctate. Length 9¾ mm.; width 4 mm.

This exceedingly beautiful species has been kindly donated by Mr. Ralph Hopping, who took two specimens at Kaweah in the Sierras of Tulare County, California. Three others have recently been taken by Dr. Fenyes near the entrance to Yosemite Valley. The antennæ are nearly as in *fallax*, which species *mirabilis*, in a general way, resembles in the arrangement of the pubescence.

C. tigrinus sp. nov.

Nearly similar in form, color and markings to *triundulatus*, the principal differences being as follows: Size distinctly larger (12 mm.); thorax more rounded at sides, densely and less finely punctate, disk with a spot on either side of the middle bearing erect black hairs, and posterior to each of these a similar but smaller spot; surface duller; the transverse bands of the elytra blacker, the hairs on these areas being blackish and contrasting sharply with the otherwise grayish pubescence. The antennæ are similar, but the second and third joints are together obviously longer than the fourth, the latter being wider and longer than any of those following.

The unique type is from Lake Tahoe, California. It is appar-

ently a female, and the antennæ do not pass the hind angles of the thorax; they are very likely longer in the male, in which also the sides of the thorax may prove to be less strongly rounded.

ACMÆODERA.

A. bowditchi sp. nov.—Moderately robust, not strongly depressed, piceous bronzed. Thorax with or without a small lateral yellow spot at basal third. Elytra with four more or less irregular transverse rows of yellow spots, which have a tendency to become confluent, especially toward the apex. Head densely punctate, vertical carina feeble. Thorax twice as wide as long, very slightly dilated before the hind angles, rather feebly narrowed in front, lateral margin not visible from above, discal impressions moderate, punctuation dense and moderately coarse at sides, less close and somewhat finer toward the middle. Elytra feebly narrowed to apical third, thence more rapidly to apex; sculpture about as usual. Prosternum slightly retracted, front margin nearly straight. Abdomen rather coarsely and closely punctate, especially toward the apex; apical plate large, truncate or broadly rounded, the free edge thin and even. Length 8-9 mm.

Hab.—Southeastern California; Arizona (Prescott).

At the time of my Revision of *Acmæodera* I possessed a single specimen of this species, which I was then unwilling to define, but which was set apart as being probably distinct. Since then, through the kindness of Mr. Frederick Blanchard, I have received several examples from Prescott, Arizona, these being a part of a considerable series collected some years ago by Mr. H. K. Burrison and sent by him to Mr. F. C. Bowditch of Boston. The species is dedicated with pleasure to friend Bowditch, to whom we are indebted for its distribution. *Bowditchi* belongs to the Group Emarginatæ, and would stand between *flavosticta* and *acuta* in the table of the Group. As compared with *flavosticta* it is less depressed, less pointed behind, the thorax less transverse, the elytral spots more numerous and the abdominal punctuation coarser. As compared with *acuta*, the elytra are somewhat more coarsely sculptured, the fifth interspace is distinctly more convex toward the base, the elytral spots are larger and more constant, the abdominal sculpture coarser and the apical plate wider. The markings are much like those in some specimens of *variegata*, which species is, however, somewhat more depressed, with much more finely punctured abdomen and no apical plate.

A. lucia sp. nov.—Closely related to *pulchella* and *obtusa*, between which it should be placed. The sides of the thorax are slightly but unmistakably retracted behind, instead of being convergent from the base as in *pulchella*; the lateral margin is still more inferior; the thoracic punctuation more shallow and

subvariolate, and the outer antennal joints more acuminate. The lateral thoracic spot is present in all examples seen, and is, as a rule, wider than in *pulchella*. In one example there is a smaller spot within and tangent to the outer one, and in some specimens there is a small yellow spot on each side of the prosternum. The elytral ornamentation resembles in a general way that in certain forms of *pulchella* and is quite variable. It may be described as consisting of four (or five) transverse yellow bands interrupted at the suture, the bands either fairly regular, or quite as often decidedly irregular and frequently so connected laterally as to leave the margin entirely yellow. Length 6–9 mm.

Hab.—California (eastern or southeastern); Arizona (Prescott and Fort Apache); Colorado (Glenwood Springs—Fenyes).

The Prescott specimens are from the same source as in the preceding species, and to Mr. Blanchard is due the credit of first pointing out the differences between it and *pulchella*. The species is dedicated to a friend in grateful remembrance of past favors.

SCYTHROPUS.

With the accumulation of material it is becoming increasingly apparent that Captain Casey was quite correct in remarking* that the species of this genus are somewhat numerous. Four new species were described by him in the paper mentioned in the foot-note, viz.: *ferrugineus*, *lateralis*, *cinereus* and *crassicornis*, the first named from two examples, the others from uniques. So far as I know none of these are recognized in any other collections, and practically everything is still referred either to *elegans* or to *californicus*. I have been able to identify *ferrugineus* in material sent me by the National Museum, where it passed as *californicus*, but I am as yet quite unacquainted with the other species described by Casey.

Both Horn and Casey were at fault in supposing the variation in the relative lengths of the abdominal segments to be of a specific nature. These differences are purely sexual, and substantially the same in all species, the second segment being nearly equal in length to the two following united in the female, but distinctly shorter in the male. There are differences in the relative lengths of the funicular joints and also in the form of the front and middle tibiæ—the latter in part sexual—which are of use in specific characterization, but these—more especially the funicular joints—seem subject to a sufficient amount of individual variation to make their use hazardous except in series.

* On some New North American Rhynchophora. Ann. N. Y. Acad. Sci., iv, 1888, p. 274.

The very small Lower Californian species, more recently described by Horn as *Scythropus delicatulus* is not a *Scythropus* at all. The rostral characters are very different from *Scythropus*, the divergent alæ and long scrobes being nearly as in *Cyphomimus*. In *Scythropus* the tibiæ are mucronate in both sexes; in *delicatulus* they are mucronate in the male only. There are also antennal and abdominal differences, and the coloration is not Scythropoid in type. It is probable that a new genus will be found necessary when the Otiorhynchidæ shall have been properly revised.

Two new names appear in the following tabular statement, following which will be found brief descriptions. It has of course been necessary to use the characters given by Captain Casey, for the separation of the species described by him, and as yet unknown to me.

Scales of elytral disk more or less mottled, especially toward the suture.
Antennal scape long, slender, passing distinctly beyond the posterior margin of the eye.
Body black, legs rufous; vestiture denser, scales of upper surface from one-half longer than wide to twice as long as wide ..... **californicus.**
Body ferruginous throughout; vestiture sparser, scales much more elongate, at least three to four times as long as wide, and at certain parts of the elytral disk—notably in the scutellar region—quite hairlike. **ferrugineus.**
Antennal scape short, robust, arcuate, just passing the posterior margin of the eye ..... **crassicornis.**
Scales of elytral disk not mottled, the sides and sutural interspace usually paler.
Elytra tumid at the sides along the humeral interval..... **lateralis.**
Elytra evenly convex at sides.
Anterior tibiæ of male distinctly arcuate toward the apex, the inner and outer margins nearly parallel; fourth funicular joint subequal to the third ..... **elegans.**
Anterior tibiæ of male less evidently bent toward the apex, the outer margin more broadly arcuate, inner margin more strongly sinuate or roundly emarginate in apical half.
Elytral vestiture relatively sparse, the scales well separated, uniformly cinereous; elytral intervals with a row of erect scales; funicular joints uniformly and rather rapidly decreasing in length **cinereus.**
Elytral vestiture dense, suture and sides paler; erect setæ almost entirely wanting, visible only on the declivity, where they are short, subrecumbent and inconspicuous; fourth funicular joint usually distinctly longer than the third.
Prothorax more transverse; scales of elytra much broader, averaging about one-half longer than wide, those of intervals 2-6 but slightly darker than those of the sutural and outer intervals, ashy white, with faint greenish lustre..... **albidus.**
Prothorax less transverse; scales of elytra more elongate, fully or more

than twice as long as wide, those of the sides and sutural interval paler and contrasting strongly with the rest of the disk, which varies in color from ochreo-cinereous to greenish or cupreous ..... **miscix.**

S. albidus sp. nov.—Slightly more robust, but rather less convex than *elegans*. Black, legs and antennæ bright rufous; vestiture consisting of broad densely placed scales, which are nearly white on the sutural interval and at the sides of the elytra, elsewhere ashy white, with faint greenish or pearly lustre; elytral setæ visible only on the declivity, where they are short, subrecumbent and inconspicuous. First funicular joint equal to the second and third united, fourth distinctly longer than the third, fifth shortest. Thorax fully one-half wider than long, widest at middle, sides evenly arcuate. Elytra widest at apical third, posthumeral sinuation feeble. Front and middle tibiæ strongly deeply arcuate within in apical half, the inner margin almost angulate above the sinus; outer margin more broadly arcuate toward the apex. Length 6.5 mm.

Described from a single female taken by myself at Lake Tahoe, California.

S. miscix sp. nov.—Black, antennæ rufous, legs blackish in the male, rufous in the female; vestiture dense, sides and sutural interspace of the elytra cinereous, elsewhere with a decided ochreous or greenish tint; scales somewhat variable, but as rule quite twice as long as wide and rather coarsely strigose. Antennæ and legs nearly as in *albidus*. Abdominal setæ unusually numerous and bristling in the male, less so in the female. Length 4.6–6.8 mm.

The type series sent me by Mr. Ricksecker is from the vicinty of Sacramento, California, and was I believe collected by Koebele. With these I have placed specimens from Easton, Washington (Koebele), and Helena, Montana (Hubbard and Schwarz), which conform rather closely to the types, but are very variable in color, some being brilliant green or cupreous. These strikingly resemble *elegans*, but seem distinct and more nearly in accord with *miscix* by the more strongly emarginate, less parallel front tibiæ (♂), by the more arcuate middle tibiæ, the relatively longer fourth funicular joint, the slightly more transverse thorax and the more hirsute abdomen.

Elegans seems to range entirely across the continent, there being specimens from Montana and California in the material before me which I am not able to separate. *Californicus* extends the entire length of the Pacific district, and eastward to New Mexico, if a specimen from the latter locality is properly referred.

Description of a New Genus and Five New Species of ACULEATE HYMENOPTERA from the Santa Fé Mountains, New Mexico.

BY P. CAMERON.
(New Mills, by Stockport, England.)

PARAMASARIS gen. nov.

Radial cellule with a distinct cellule at its apex, elongate, reaching to the apex of the wing; three closed cubital cellules, the 2nd and 3rd receiving each a recurrent nervure. Antennæ short, clavate, becoming gradually thickened from the fifth joint to the base of the last. Eyes reaching close to the base of the mandibles. Occiput sharply margined. Petiole elongate, as long as the rest of the abdomen, stout, the basal third narrower than the middle; the extreme apex distinctly narrowed, forming a short neck. Second abdominal segment bell shaped, longer than the petiole. Mandibles short, not toothed at the apex. The occiput is transverse behind; the space behind the eyes is moderate; the eyes slightly converge below; the prothorax is large; the apex of the tegulæ extends beyond the base of the scutellum, which is flat and is slightly narrowed towards the apex, where there is a wide transverse furrow; the post-scutellum is not clearly separated from the metanotum. The alar stigma is distinct; the transverse basal nervure is interstitial; in the hind wings the radial cubital and discoidal nervures extend to the apex of the wings, and the transverse cubital nervure is distinct; the anal nervure is distinct but short, it not extending beyond the transverse median nervure, which is straight and oblique and does not reach to the middle of the wing; the submedian cellule thus formed is wide; the anal cellule is open at the apex, through the shortness of the anal nervure. The clypeus is large, convex, its apex is transverse, with the sides obliquely narrowed; at the base of the scutellum, behind the transverse groove separating it from the mesonotum, is a row of large foveæ; the inner spur of the tibiæ is much larger and broader than the outer one; there is a short blunt tooth or dilatation on the base of the claw.

The principal characteristics of this genus—the short dilated antennæ and the presence of two spurs on the middle tibiæ—refer it to the Masaridæ if anywhere, as the two spurs on the middle tibiæ

separate it from the Eumenidæ, and the form of the claws prevents it from being placed in the Vespidæ, as well as the fact that the 2nd cubital cellule does not receive both the recurrent nervures, which is always the case with the Vespidæ. I have not ventured to extract the mouth organs in order to make an exact examination of the palpi; but I can make out with certainty the fact that there are at least 5 joints in the maxillary and 4 in the labial palpi. The genus differs from the typical Masaridæ in having 3 closed cubital cellules, and in the recurrent nervures being received in different cellules, in which respect it agrees with the genus *Euparagia* Cresson, from which it may be known, *inter alia*, by the distinctly appendiculated radial cellule. In the latter respect it agrees with *Quartinia*, but that genus otherwise is a typical form of Masaridæ. The Masaridæ, as defined by de Saussure and other writers, have only two closed cubital cellules, so that if the present genus and *Euparagia* are to be included in it, the definition will have to be altered, so far as the number of the cubital cellules is concerned.

Paramasaris fuscipennis sp. nov.

Black, covered with a white pile; the under side of the antennæ brownish, the apex of the petiole and of the second segment pallid yellow; the wings fuscohyaline; the radial cellule smoky; the stigma and nervures black. ♀. Long: 7 mm.

Antennæ shorter than the thorax; the joints of the club clearly separated, the thickening commences from the 4th joint. The front, vertex and the upper part of the eye incision distinctly punctured; the clypeus is shining and less strongly and closely punctured; its apex is distinctly depressed and the sides are roundly narrowed. The sides of the thorax are more densely covered with a silvery pile than the upper part; the pro- and mesothorax are closely and distinctly punctured; on the apex of the mesonotum, in the centre, are two short deep furrows, which are deep and are wider at the apex than at the base. The scutellum is more strongly and somewhat more widely punctured; its basal furrow bears 7 stout longitudinal keels. The median segment, except on the base and the lower part of the pleuræ, bears large, round, deep punctures; the centre in the apex is smooth, shining and depressed; down the middle of the segment is a narrow, transversely striated band; the transverse striæ being weaker at the base, and at the apex they are stouter and fewer in number. The base of the prothorax is keeled all round; behind this keel is another less distinct one, which curves backwards above to near the end of the pronotum; on the pleuræ the space between the two keels is striated. Mesopleuræ obscurely and sparsely punctured; in front of the centre are 7 large foveæ, the upper 4 are round and deep and the uppermost is in front of the others; the lower ones are larger and deeper, are separated by stout keels, and are placed more in front of those in the middle so that the row of foveæ forms a curve; the apex is bordered by a narrow crenulated furrow. On the lower half of the base of the metapleuræ are four deep

foveæ separated by stout keels; on the upper half, behind the middle, is a row of smaller foveæ; the apical half is irregularly closely reticulated. Legs pruinose, black; the tarsi with a fuscous tint; the calcaria are testaceous. The radial cellule is distinctly appendiculated, the appendicular cellule being longer than broad; the 2nd cubital cellule at the top is not one-fourth of the length of the 3rd, at the bottom half its length; the first recurrent nervure is received near the base, the 2nd close to the middle of the cellule; the transverse basal nervure is interstitial. Abdomen pruinose; the petiole is fully longer than the 2nd segment and is punctured; the punctures at the base being stronger than on the rest of it; the apex is depressed and narrowed; near the base of the narrowed neck is a row of depressed furrows.

Hab.—Santa Fé Mountains, New Mexico.

Nysson aureobalteatus sp. nov.

Black, densely covered with silvery pubescence; the abdominal segments with broad, interrupted pale yellow bands on the apices; the last segments ending in two large broad teeth, which are rounded and narrowed at the apex; the wings hyaline, slightly tinged with fuscous; the stigma and nervures black. ♂. Long: 10 mm.

Antennæ black; the 10th to 12th joints slightly dilated towards the apex beneath. Front and vertex closely and rather strongly punctured; the front above the antennæ convex, this dilated part being keeled in the centre. The apex of the clypeus has a broad, distinct margin, and is not quite transverse; the labrum is fringed with white hair. The mandibles are broadly rufous at the base. Pro- and mesonotum strongly and closely punctured; the base of the mesonotum is covered with golden pubescence. The scutellum is more coarsely punctured than the mesonotum, its sides are stoutly margined and project roundly at the sides at the apex; the post-scutellum is broadly bilobate at the apex. Median segment coarsely, irregularly reticulated; the teeth are longish, project obliquely and are broadly yellow. Mesopleuræ, except on the basal and apical slopes, rugosely punctured. On the upper part of the base of the metapleuræ are three stout longitudinal keels, the lower keel is roundly curved and is placed nearer the middle one than is the upper; the lower part of the base and apex is smooth, the rest is punctured. Legs black, covered with white pubescence; the knees and the four front tibiæ testaceous in front; the spines on the hinder tibiæ are pale; the calcaria black. The pedicle of the 2nd cubital cellule is as long as the basal branch of the nervure, which is roundly curved; the 2nd is straight and oblique; the first recurrent nervure is received close to the base of the cellule, the second shortly beyond the middle. The first abdominal segment is closely and strongly, the 2nd less strongly and much more sparsely punctured; the lateral marks are all much broader than long; the 2nd to 5th ventral segments are narrowly lined with yellow at the apex; the last segment is strongly, rugosely, but not very closely, punctured, except at the base; there are two large apical teeth, which become narrowed and rounded at the apex, they form a semicircle; at their base on the outerside, is, on either side, a very short rounded projection, which does not reach to the base of the incision. The ventral surface is thickly covered with silvery pubescence.

Hab.—Santa Fé Mountains, New Mexico.

Comes near to *N. fuscipes* Cresson, from Texas. The form of the last segment is different. In the present species the incision is distinctly wider than long; the teeth being not much longer than their width at the base. In *fuscipes* the incision is distinctly longer than wide, and the teeth are long and narrow; the lateral teeth, too, are sharper and narrower and extend beyond the base of the incision, which is not the case with the present species. The bands on the apices of the segments have a distinct golden color. The 7th abdominal segment (♂) of *N. fuscipes* is figured by Handlirsch Sitzb. der Kais. Akad. der Wissensch., 1887, pl. iv, p. 23.

Alyson flavomaculatus sp. nov.

Black, the clypeus, two marks on the apex of the pronotum, a line on its hinder edge, an interrupted line near the base of the scutellum, two small marks near the middle of the basal segment of the abdomen, and a broad, irregular band on the base of the 2nd segment, bright yellow; the wings hyaline, the nervures and stigma black. ♂. Long: 7 mm.

Antennæ stout, black, the scape broadly yellow below; the flagellum covered with a short black pile. Head black; the lower two-thirds of the inner orbits—the band, broad below, narrowed above—the clypeus and the mandibles, except at the apex, yellow; the front, face and clypeus densely covered with silvery pubescence; the front minutely and closely punctured. Mesonotum closely and minutely punctured and covered with a short down, as is also the scutellum. The post-scutellum is thickly covered with fuscous pubescence. In the centre of the median area is a large, somewhat triangular area, which reaches close to the top of the apical slope, in its centre are two stout keels which diverge slightly towards the apex; the sides are marked with short keels, which unite to the bounding keels; on the outer side of these are some irregular longer keels, there being also a few on the innerside of the lateral keels. The whole segment, and more particularly the apical slope, is covered thickly with white pubescence; the mesopleuræ are less thickly covered with similar pubescence. Legs black; the knees, the whole of the anterior tibiæ and the base of the middle tibiæ in front, testaceous; the whole of the legs are covered with a white pile. Wings clear hyaline, the nervures and stigma black; the first transverse cubital nervure is broadly rounded; the 2nd is straight and oblique; the third is roundly curved outwardly from near the top. Abdomen smooth and shining; the 2nd and following segments are covered thickly with a pale pubescence; there are two small yellow marks shortly beyond the middle of the first segment; the 2nd segment is broadly banded with yellow at the base, the yellow band being narrowed in the middle; the apices of the other segments are brownish at the apex; the last is punctured and is transverse at the apex.

Hab.—Santa Fé Mountains, New Mexico.

As this species is not a typical *Alyson*, nor of the allied genus or subgenus *Didineis*, I give below a generic description of it. It has the neuration of *Alyson* rather than of *Didineis*, except that the

first recurrent nervure is received distinctly in the 2nd cubital cellule, and it differs further from *Alyson* in the abdominal 2nd segment being broadly banded with yellow instead of having two yellow marks at the base.

♂.—Second cubital cellule petiolate; the 1st recurrent nervure is received shortly beyond the first transverse cubital; the 2nd is interstitial; the transverse median nervure is interstitial. Antennæ stout; the apical joint roundly incised on the basal half beneath. Mandibles longish, slightly narrowed behind the middle. Eyes large, slightly diverging above and reaching to the base of the mandibles below. Ocelli large, placed almost in a triangle. Pronotum wider than long. Median segment large; in the centre, at the base, is a large triangular area, which reaches near to the top of the apical slope and is joined to it by a short keel; the apical slope is keeled above and down the centre. Legs long, slender; the middle tibiæ have one spur; the apex of the hinder femora bears a short tooth below. Abdomen not much longer than the head and thorax united; the apical segment without a distinct pygidial area, strongly punctured, the sides bordered, the apex transverse, with the sides slightly projecting; its ventral surface is flat, simple. The antennæ are placed shortly above the clypeus; the clypeus is short, transverse in the middle at the apex, the sides broadly rounded. The base of the pronotum is clearly separated behind by a transverse furrow; there is a transverse furrow on the base of the mesonotum; the basal segment of the abdomen is marked with yellow; the base of the second is broadly banded with yellow; the pterostigma is large, the radius is roundly curved from the base to the apex.

Oxæa tachytiformis sp. nov.

Black, the head and thorax thickly covered with pale fulvous pubescence; the apices of the abdominal segments banded with pale pubescence; the wings fusco-violaceous, paler at the base; the eyes at the top are separated by the length of the scape of the antennæ—by a distinctly greater distance than the length of the 12th antennal joint. ♂. Long: 19 mm.

Antennæ black, bare, the last joint obliquely truncated. Head opaque, closely punctured, except on the apex of the clypeus; the occiput, the vertex, sides of the face, clypeus and labrum thickly covered with pale fulvous hair; there is a long broad depression in the centre of the clypeus; below the front ocellus is a fovea, which is widened at the base and roundly narrowed at the apex. The eyes are large, reach to the base of the mandibles and distinctly converge above where they are separated by fully the length of the scape; the inner orbits are obliquely depressed. Labrum shining, its top finely and closely transversely striated; the sides are obscurely punctured and thickly covered with pale fulvous hair; the apical half is keeled in the middle. Mandibles piceous-black; below fringed with long pale fulvous hair. Thorax closely, uniformly and distinctly punctured. The dorsal segments of the abdomen are closely punctured, more strongly on the basal two, the others being more shining and smooth on the base; the hair bands on the apices of the basal four segments are broad and white; on the 5th the hair band is longer and darker colored at the base; the apical two segments are testaceous towards the apex, the last has a broad, shallow, rounded incision on the apex. Wings fuscous-hyaline, with a distinct violaceous tinge;

the nervures are dark piceous. Legs black; the hair on the femora and tibiæ is long and pale fulvous; on the four front tarsi it is bright rufous; on the hinder black, mixed with rufous. The pronotum is sharply raised behind and is clearly separated from the mesonotum, there being a deep furrow between the two; the calcaria are rufous; the ventral surface has the basal two segments covered with long pale hair, the others more thickly with shorter, stiffer black pubescence. The dorsal surface of the abdomen is devoid of iridescence.

Hab.—Santa Fé Mountains, New Mexico.

This species (which looks exactly like a *Tachytes*) come nearest to *O. vagans* Fox from Texas; the two may be separated thus:

Eyes nearly touching on the vertex, being separated there by about the length of the 12th antennal joint, the pronotum above emarginate medially. **vagans.**

Eyes widely separated on the vertex, being there separated by twice the length of the 12th antennal joint; the pronotum not emarginate medially. **tachytiformis.**

Osmia Foxi sp. nov.

Metallic-green, mixed with blue; the vertex and mesonotum darker and with brassy tints; the basal four segments of the abdomen with their apices distinctly banded with violet; the wings clear hyaline; the stigma and nervures fuscous-black. ♂. Long: 8 mm.

Antennæ black; the scape slightly coppery and closely punctured. Head closely, distinctly and uniformly punctured; the lower part of the front, the face and lower part of the clypeus sparsely covered with long white hair; the sides of the clypeus are dark violet, mixed with golden tints; the apex is dark violet. Mandibles black; the base blue and closely punctured; the rest of them to near the apex more strongly and not so closely punctured. The mesonotum and scutellum are almost glabrous; the pleuræ and sides of the metanotum covered, but not very thickly, with long white hair; there is a narrow line on the basal half of the mesonotum in the centre and a shorter one on the base of the scutellum. The area on the median segment is closely punctured, and at the base is irregularly striated; the apical furrow is smooth, dark violet, wide and deep; the rest of the segment is irregularly punctured. Tegulæ at the base closely punctured, blue, green and golden; the rest sparsely punctured and for the greater part dark violet with golden tints. Legs colored like the body and largely marked with brassy tints; the tarsi are blackish and below are thickly covered with rufous pubescence. Abdomen closely punctured, but not so strongly as the thorax; the purple apical bands are smooth and depressed. The apical segment is depressed in the centre, through the base and apex having an oblique slope; the apex is darker colored than the base and is roundly incised in the middle; the teeth are bluntly rounded; the sides, at the apex, are smooth, impunctate and blue. The apex of the clypeus is broadly rounded.

Hab.—Santa Fé Mountains, New Mexico.

Comes near to *O. texana* Cresson, and *O. subfasciata* Cresson, but cannot well be confounded with either, as it may be readily separated by the clear hyaline wings and by the legs not being black.

THE NORTH AMERICAN ORYSSIDÆ.

BY J. CHESTER BRADLEY.

The following characters serve to distinguish the family: metathorax not fissured in the middle; vertex tuberculate; front wings with two submarginal cells; *the antennæ inserted in a groove below the clypeus;* and the abdomen cylindrical. The ovipositor is in many specimens exerted, evidently at the will of the insect.

Out of four genera, *Oryssus* of Latreille, *Chalinus*, *Ophrynopus* and *Mocsarya* of Konow, two are represented in North America.

Face bi-carinate.....**Ophrynopus** Konow.
Face not carinate.....**Oryssus** Latreille.

OPHRYNOPUS Konow.

1897, *Ophrynopus* Konow, Termeszetrajzi Füzetek, xx, p. 602.

Face with two longitudinal carinæ, which are united by a third carina above; a short carina is also present beneath each eye; vertex tuberculate; abdomen cylindrical.

Ophrynopus mexicanus Cresson.

1879, *Oryssus mexicanus* Cres., ♀, Proc. Ent. Soc. Phila., Acad. Nat. Sci., p. xi.
1897, *Ophrynopus mexicanus* Konow, ♀, Termeszetrajzi Füzetek, xx, p. 606.

♀.—Black. Face rough, with two longitudinal carinæ divergent at base and approaching above, where they are united by a third; above this is a semi-circle of tubercles; cheeks prominent, silvery sericeous; edge of clypeus reflexed; a short carina below each eye; antennæ black, inserted below the clypeus; prothorax silvery sericeous; mesothorax with a smooth ridge in the middle, and several distinct carinæ around each tegula; the sides of the first and second abdominal segments are also slightly carinate; wings fuscous, pale beneath the stigma; legs dark ferruginous, almost black; tibiæ silvery sericeous on the outside edge; posterior tibiæ with a double row of short teeth on the outside edge; abdomen dark, slightly ferruginous towards the base of each segment. Length 15 mm.

Habitat.—Mexico.

Type in the collection of the American Entomological Society.

ORYSSUS Latreille.

1796, *Oryssus* Latreille, Préc. car. génér. Insect., p. 111, n. 10.

Face without carinæ; vertex tuberculate; abdomen cylindrical.

There are four North American species, founded chiefly on color characters, though probably constant ones.

Six apical segments of abdomen red.....**occidentalis** Cresson.
Only three apical segments of abdomen red.....**terminalis** Newman.
Abdomen entirely black.
Thorax red.....**thoracicus** Ashmead.
Thorax black.....**sayi** Westwood.

Oryssus occidentalis Cresson.

1879, *Oryssus occidentalis* Cresson, ♀ ♂, Proc. Ent. Soc. Acad. Nat. Sci. Phila., 1879, p. x.

♂ ♀.—Black, except the 6 posterior segments of the abdomen and variable white spots on the antennæ, between the eyes, on the knees and tibiæ, and at the tip of the abdomen; face rough, vertex tuberculate; cheeks prominent; wings hyaline, fuscous or sub-fuscous beyond the stigma, except at the apex; abdomen black, six apical segments red. Length 8–14 mm.

Habitat.—Colorado, Nevada.

Types in the collection of the American Entomological Society.

Oryssus terminalis Newman.

1838, *Oryssus terminalis* Newman, ♀, Entom. Mag., v, p. 486.
1841, *Oryssus hæmorrhoidalis* T. W. Harris, Treat. Insec. Mass., p. 394.

Black, except the three posterior segments of the abdomen, and variable white spots on the antennæ, between the eyes, on the knees and tibiæ, and sometimes at the tip of the abdomen; face rough, vertex tuberculate; cheeks prominent; wings more decidedly fuscous beyond the stigma than in most specimens of *O. occidentalis;* abdomen black, except the three apical segments, which are red. Length 9–15 mm.

Habitat.—Canada, Massachusetts, Pennsylvania, New York.

Oryssus thoracicus Ashmead.

1898, *Oryssus thoracicus* Ashmead, Can. Ent., xxi, p. 178.

♂.—Similar to the other species, except that the two first five and the apical joints of the antennæ, the thorax and the legs are red; the abdomen is black. Length 4.75 mm.

Habitat.—Santa Cruz Mountains, California.

I have not seen this species.

Oryssus sayi Westwood.

1830. *Oryssus sayi* Westwood, ♀, Zool. Journ., v, p, 440.
1841, *Oryssus maurus* T. W. Harris, Treat. Insec. Mass., p. 394.
1841, *Oryssus affinis* T. W. Harris, Treat. Insec. Mass., p. 394.

Black, except for white markings on antennæ, legs, etc.; face rough; vertex tuberculate; cheeks prominent; wings hyaline, more or less fuscous beyond the stigma, except at apex; black. Length 10–15 mm.

Habitat.—Canada, Massachusetts, Oregon (Mt. Hood).

Var. *affinis* has red legs.

THE EVANIIDÆ OF AMERICA NORTH OF MEXICO.*

BY J. CHESTER BRADLEY.

In preparing this paper the writer has tried to collect, interpret and arrange what facts he could concerning this very important and much neglected family, both to satisfy his own interest, and to aid other students in their work. The material on which his decisions are based is chiefly contained in the collection of the American Entomological Society, where are all of Mr. Cresson's types, except those of *Aulacus abdominalis*, which appear to be lost.

He wishes to express his thanks to Rev. V. A. Huard, who very kindly secured l'Abbé Provancher's types from the Parliament Museum in Quebec and loaned them to him. Also to Mr. Henry L. Viereck who has given him valuable advice and suggestions. To Dr. A. D. Hopkins for specimens of *Aulacus abdominalis*. To Mr. Wm. H. Ashmead for valuable criticism and suggestions. To Mr. R. J. Weith and others. Mr. G. L. Sargent has drawn Figs. 7 and 8 of Plate XI for him.

The only important paper on the family hitherto published is Herr August Schetterer's excellent monograph in the Ann. d. k. k. Nath. Hofm. in Vienna, vol. iv, 1889, 3 parts and 6 plates. It is very exhaustive, but Herr Schletterer has failed to comprehend the true relations of the North American species, probably from lack of material, and according it is of little value to the student of the North American fauna.

The family was first recognized by Latreille in 1802 as "*Evaniales*," and by Westwood as "Evaniidæ" in 1843. It is easily distinguished by the fact that the abdomen is attached by a petiole to the dorsal aspect of the propodeum, and never normally between the coxæ, and by the existence of a distinct costal cell in the fore wings. Mr. Ashmead in his "Classification of the Ichneumonoidea" has recognized three subfamilies, quite correctly we think. They are readily separable by the following table: See Plate XI, Figs. 1, 2, 3, 4.

* This paper was commenced in the Entomological Student, vol. ii, p. 28, but the discontinuation of "The Student" prevented its completion. The first part is here republished and finished, thus enabling the author to make several necessary changes.

A. Antennæ inserted far above the clypeus, at about the middle of the face, front wings without more than one recurrent nervure.

1. Tibiæ normal. Abdomen attached by a slender petiole to the superior margin of the mesothoracic truncature, distant from the scutellum. Subfamily I, EVANIINÆ.

2. Tibiæ clavate, much swollen at apex. Abdomen attached to the base of the propodeum, approximate to the scutellum. Subfamily II, GASTERUPTIONINÆ.

B. Antennæ inserted just above the clypeus. Front wings usually with two recurrent nervures .....Subfamily III, AULACINÆ.

Subfamily III, AULACINÆ.

1840-42. *Aulacidæ* Shuckard, family. Newman's Entomologist, p. 121.
1887. *Aulacinæ* Cresson, subfamily. Synopsis Hymen. America, p. 36.

Medial thoracic lobe often gibbous and emarginate, always transverse striate. Front wings with two recurrent nervures, of which the second is generally partially obsolete. Hind wings with a median cell, except in *Pammegischia*. Tibiæ normal. Abdomen club shaped. Ovipositor exerted and long.

A marked sexual character exists in the hind coxæ, which are normal in the males, but in the females are sculptured on the inner surface with a groove at the base of which is a well marked tooth, and this in *Pammegischia* is greatly prolonged.

An available character for generic separation, first recognized by Kieffer,* is to be found in the sculpture of the tarsal claws. The species of the genera thus defined are also united by other characters, so that they are truly natural groups.

The subfamily differs markedly in appearance and habits from the other two. The species, so far as known, are parasitic on the larvæ of Coleoptera. *Pammegischia xiphydriæ* Ashm. has been bred from *Xiphydria provancheri*. There are five genera, all represented in America.

A. Posterior wings with a distinct median cell. Hind coxæ of the females not greatly prolonged within, but with a tooth on the inner margin.

1. Anterior margin of the prothorax more or less angled with a strong tooth at the angle. Tarsal claws with four teeth beneath. **Deraiodontus** nov. gen.

2. Anterior margin of the prothorax rounded, without a tooth.

a. Tarsal claws with four teeth beneath **Pristaulacus** Kieffer.

b. Tarsal claws with three teeth beneath **Oleisopristor** nov. gen.

c. Tarsal claws with one tooth beneath.....**Aulacus** Jurine.

* Ann. Soc. Ent. Fr., lxvii, p. 813, 1899.

B. Posterior wings without nervures, except the costal and a trace of the anal. Hind coxæ of the females greatly prolonged within. Tarsal claws with no teeth..... **Pammegischia** Provancher.

DERAIDONTUS nov. gen.

Head subquadrate, antennæ inserted just above the clypeus; prothorax with an acute tooth on the somewhat angled margin; mesothorax with the medial lobe often gibbous, always rugose; wings often with more or less fuscous on the basal half, as well as below the stigma; the ungula bear four well-defined teeth beneath; abdomen clavate; ovipositor strongly exerted.

Type (*Aulacus*) *montanus* Cresson.

Medial mesothoracic lobe strongly gibbous.

Wings hyaline, without violaceous reflection; abdomen black, except the ventral part of the first segment, which is sometimes dull rufous **niger** Shuckard.

Wings of the ♀ showing strong violaceous reflection; abdomen rufous, marked with black..... **montanus** Cresson.

Medial mesothoracic lobe not gibbous.

Wings showing strong violaceous reflection; much fuscous present in the basal portion; legs black; petiole short..... **fuscalatus** nov. spec.

Wings without violaceous reflection, or more than a trace of fuscous in the basal portion; legs flavous; petiole long.... **flavicrurus** nov. spec.

Deraiodontus niger Shuckard.

1841. *Aulacus niger* ♀ Shuckard, Entomologist, p. 124.

1841. *Aulacus ater* ♀ Westwood, Ann. and Magazine Nat. Hist., vii, p. 538.

1901. *Pristaulacus niger* Ashmead, Ent. News, xii, p. 278.

♀ ♂.—Black; sparingly pubescent; face finely punctulate, pubescent; vertex more sparingly punctulate; antennæ black, 12 mm. long; medial mesothoracic lobe gibbous, emarginate, rugose; wings hyaline, with a very faint trace of fuscous beneath the stigma and in the median cell; legs black, tending to castaneous; abdomen entirely black, or more usually with a deep red band on the ventral part of the first segment; ovipositor 17 mm. long. Length 14 mm.

Habitat.—Massachusetts.

Deraiodontus montanus Cresson.

1879. *Aulacus montanus* Cresson, ♀, Trans. Am. Ent. Soc., vii, p. 256.

1901. *Pristaulacus montanus* Ashmead, Ent. News, xii, p. 278.

♀.—Black; sparingly pubescent; face and vertex smooth; face pubescent; antennæ black, 10 mm. long; mesothorax with the medial lobe gibbous and emarginate, rugose; wings hyaline or slightly yellow, showing strong violaceous reflection; a quadrate fuscous spot beneath the stigma; a trace of fuscous often in the median cell and along the transverse medial nervure; legs black; abdomen ferruginous, posterior segments and petiole black; ovipositor 13-14 mm. long. Length 11-14 mm.

♂.—Here first described. Differs only in having less fuscous and no violaceous reflection on the wing.

Habitat.—Nevada, Washington.

Types in the collection of the American Entomological Society.

Deraiodontus fuscalatus nov. spec.

♀.—Black; face punctate, vertex polished, shiny; antennæ black, 7 mm. long; mesothorax not gibbous, very broadly, not deeply emarginate, rugose; wings hyaline, with strong violaceous reflection; a fuscous spot extending below the stigma to the subdiscoidal nervure; the costal cell fuscous, and a fuscous band from the basal half of the median cell to the apex of the second discoidal, where it joins with a fuscous band running the entire length of the anal nervure; legs and feet black; petiole short, black above; the abdomen entirely red; ovipositor very short, 7.5 mm. Length 10 mm.

Habitat.—Washington, one specimen.

Type in the collection of the American Entomological Society.

Deraiodontus flavicrurus nov. spec.

♀.—Black; sparingly pubescent; face and vertex smooth, shiny; medial mesothoracic lobe not gibbous, but emarginate; wings hyaline, without violaceous reflection, a quadrate fuscous spot beneath the stigma, and the apex of the anterior wings fuscous; a trace of fuscous in the median cell and along the transverse medial and second recurrent nervures; legs flavous, hind coxæ black, hind femora castaneous; abdomen with a very long petiole, rufous, posterior segments and petiole above black, 6 mm. long; ovipositor 11 mm. long. Length 11 mm.

Habitat.—Virginia, one specimen.

Type in the collection of the American Entomological Society.

PRISTAULACUS Kieffer.

1899. *Pristaulacus* Kieffer, Ann. Soc. Ent. Fr., lxvii, p. 813.

The anterior margin of the prothorax rounded, without an acute tooth; first transverse cubitus interstitial with or close to the first recurrent nervure; tarsal claws with four teeth beneath, the fourth one very small and blunt. See Plate XI, Fig. 7.

Thorax decidedly gibbous (in *pacificus* but slightly).
Wings showing a strong violaceous reflection .....**occidentalis** Cresson.
Wings showing slight violaceous reflection; fuscous spot beneath stigma present in both ♂ and ♀; legs yellow..... .....**melleus** Cresson.
Wings showing no violaceous reflection; fuscous spot beneath stigma almost obliterated in male.....**pacificus** Cresson.
Thorax not gibbous.
Wings violaceous, with a yellow hyaline band beneath the stigma.
fasciatus Say.

Pristaulacus occidentalis Cresson.

1879. *Aulacus occidentalis* Cresson, ♀, Trans. Am. Ent. Soc., vii, p. 255.

1886. *Aulacus abbottii* Schletterer, Ann. d. k. k. Nath. Hofm. Wien., iv, p. 539.
1901. *Pristaulacus occidentalis* Ashmead, Ent. News, xii, p. 278.

♀.—Black or ferruginous; face and vertex black, punctate; mandibles and edge of labrum ferruginous; antennæ black, 10–11.5 mm. long; scape ferruginous beneath; medial mesothoracic lobe strongly gibbous, emarginate, transverse rugose; body but sparingly pubescent; wings stained yellowish, and showing a brilliant violaceous reflection; a fuscous spot beneath the stigma and at the apex of anterior wings; legs ferruginous, tarsi paler, coxæ and trochanters black; petiole distinct, ferruginous, with a narrow black stripe above and below; abdomen robust, ferruginous, terminal segments dusky or black. Length of abdomen 5–7 mm. Ovipositor 13–15 mm. Body 11–15 mm.

♂.—Differs from the female only in being slightly more pubescent, wings less fuscous, but showing the same brilliant violaceous reflection, the abdomen ringed with black on several segments, the coxæ, trochanters, face and entire scape more or less ferruginous.

Habitat.—Colorado, Nevada, Washington.

Types in collection American Entomological Society.

Described by Cresson from 15 females. Besides these the author has examined 11 females and 4 males from Washington. The male is here described for the first time. The violaceous reflection is characteristic, but the color varies, through all stages from black to ferruginous. The flagellum is always dark.

Pristaulacus melleus Cresson.

1879. *Aulacus melleus* Cresson, ♀, Trans. Am. Ent. Soc., vii, p. 255.
1879. *Aulacus consors* Cresson, ♂, Trans. Am. Ent. Soc., vii, p. 255.
1901. *Pristaulacus consors* Ashmead, Ent. News, xii, p. 278.
1901. *Pristaulacus melleus* Ashmead, Ent. News, xii, p. 278.

♀.—Pale ferruginous, face rough, vertex smooth; mandibles tipped with black; antennæ black, 17 mm. long; scape ferruginous; medial mesothoracic lobe gibbous, broadly emarginate, strongly rugose; wings stained slightly yellowish, a quadrate fuscous spot beneath the stigma, extending to the subdiscoidal nervure. A fuscous spot at apex of anterior wings, and the basal half of the median cell fuscous; wings showing slight violaceous reflection; legs ferruginous, trochanters ringed above with black; abdomen ferruginous, with an unusually long petiole, length abdomen 8–9 mm.; ovipositor 21 mm. Length 16 mm.

♂.—Black; vertex smooth; face roughened; antennæ black, 10–12 mm. long; scape ferruginous beneath; medial mesothoracic lobe gibbous, emarginate, rugose; wings stained yellowish, showing but slight violaceous reflection; legs ferruginous, trochanters ringed above with black; abdomen ferruginous, banded with black. Length 13–15 mm.

Habitat.—Nevada.

Cresson described the species from 2 females and 4 males, the indications are that it varies as much in color as does *occidentalis*, to which it is very closely related.

Types in the collection of the American Entomological Society.

Pristaulacus pacificus Cresson.

1879. *Aulacus pacificus* Cresson, ♀, Trans. Am. Ent. Soc., vii, p. 256

1901. *Pristaulacus pacificus* Ashmead, Ent. News, xii, p. 278.

♀.—Black; vertex smooth, face roughened; antennæ black, 12 mm. long; medial mesothoracic lobe but slightly gibbous, scarcely emarginate, and the transverse striæ almost obliterated; wings without violaceous reflection; a fuscous spot beneath the stigma extending to the marginal nervure; the median cell hyaline, but a slight fuscous spot along the transverse medial nervure; legs ferruginous, hind legs darker; abdomen ferruginous, short and robust; ovipositor 15–18 mm. long. Length 12–14 mm.

♂.—Differs only in having the fuscous spots on the wings almost obliterated, and the abdomen banded with black. Length 12–13 mm.

Habitat.—Vancouver, Washington.

This species also varies from black to ferruginous. The male is here described from two specimens from Washington.

Types in the collection of the American Entomological Society.

Pristaulacus fasciatus Say.

1829. *Aulacus fasciatus* Say, Contr. Maclurian Lyc. to Arts and Sci. Phila., vol. i, p. 67.

1901. *Pristaulacus fasciatus* Ashmead, Ent. News, xii, p. 278.

♀.—Entirely black; everywhere covered with black pubescence; vertex smooth; antennæ black; medial mesothoracic lobe not gibbous, slightly emarginate, transverse rugose; wings entirely violaceous, except for a yellow hyaline band extending beneath the stigma; legs entirely piceous; abdomen short, robust, almost without petiole; ovipositor 6.5 mm. long. Length 14 mm.

Habitat.—New Jersey, Pennsylvania, Ohio.

The author has seen but one specimen of this strikingly beautiful species, collected by Mr. Henry W. Wenzel at Da Costa, New Jersey, July 19.

OLEISOPRISTER nov. gen.

The anterior margin of the prothorax rounded, without an acute tooth; medial mesothoracic lobe not gibbous; wings hyaline or stained slightly yellowish fuscous; first transverse cubitus interstitial with or close to the first recurrent nervure; hind coxæ normal; tarsal claws with three teeth beneath, the third very small and often scarcely perceptible with a hand glass. See Plate XI, Fig. 8.

Type (*Aulacus*) *firmus*.

Kieffer separated his *Pristaulacus* from *Aulacus* by its having three or more teeth on the tarsal claws, whereas *Aulacus* has but one. But at least of our American species, those having three teeth form a group as equally distinct from those having four, as do those having but one. Therefore, the logical conclusion is to establish a

new genus for those having three teeth, and let *Pristaulacus* remain for those having four, as Kieffer's illustration* shows. See Plate XI, Figs. 7, 8 and 9.

Mesothorax deeply emarginate. Legs black.....**firmus** Cresson.
Mesothorax very slightly emarginate.
Length 13.5 mm. Legs black. Apparently but 2 teeth on tarsal claws.
subfirmus Viereck, nov. spec.
Length 16 mm. Legs fulvous, femora red.....**resutorivorus** Westwood.
Length 14.5 mm. Feet rufous, femora fuscous.....**abbottii** Westwood.
Length 10 mm. Feet yellow, femora fuscous.....**stigmaterus** Cresson.

Oleisoprister firmus Cresson.

1879. *Aulacus firmus* Cresson, ♀, Trans. Am. Ent. Soc., vii, p. 256.
1901. *Pristaulacus firmus* Ashmead, Ent. News, xii, p. 278.

♀.—Black; covered with fine white pubescence; vertex smooth, face punctulate; antennæ black; medial thoracic lobe not gibbous, emarginate; wings hyaline, a fuscous spot beneath the stigma and on the transverse medial nervure and at the apex of the front wings, which are without violaceous reflection; legs black, tibiæ castaneous; abdomen ferruginous, with black markings above, 6.5 mm. long; ovipositor 17 mm. long. Length 14 mm.

Habitat.—Colorado, one specimen.

Type in the collection of the American Entomological Society.

See Plate XI, Fig. 8.

Oleisoprister subfirmus Viereck, nov. spec.

"♀.—Mandibles roughened at base, teeth and edges smooth; the rest of the head moderately rugose, tending to transversely striate on the front, smoothest around the ocelli and over to the eyes; scape and antennæ minutely roughened; prothorax roughened, with the exception of the dorso-posterior portion; the dorsal portions of the other thoracic segments coarsely striate; posterior coxæ rugose-punctate; abdomen smooth, as in the other species; ovipositor as long as the body; head and thorax covered with silvery pubescence; the thorax more sparcely than the head, legs covered with very short brownish pubescence; wings sub-hyaline, nervures piceous, a brown stain the width of the stigma extending from the stigma to the cubital nervure, a faint trace of brown stain on each side of the transverse medial nervure and at the apex; eyes, head, thorax, spot at base of the first dorsal abdominal segment, a trace at the apex, greater part of the third and the rest of the abdominal segments black, the remaining space on the abdomen translucent red; posterior legs black; the anterior pairs almost black. Length 13.5 mm.

"Apparently near to *O. firmus* Cresson, from which it differs, however, in the faintly impressed dorsum, the closer arrangement of the ocelli, the uniformly different sculpture and smaller size.

"One female, Riverton, N. J., June 17, 1900; collected by Mr. Chas. W. Johnson," Henry L. Viereck.

* Ann. Soc. Ent. Fr., lxvii, p. 814.

Type in Mr. Viereck's collection.

The author is indebted to Mr. Viereck for contributing the description of this new and interesting species. The third tooth on the tarsal claws is so small as to be perceptible only with the utmost difficulty, but is nevertheless present.

Oleisoprister resutorivorus Westwood.

1851. *Aulacus resutorivorus* Westwood, ♀, Trans. Ent. Soc. London., n. ser., vol. i, p. 224.

♀.—Black; griseous pubescent; face very rough, vertex smooth, antennæ black; mesothorax not gibbous, emarginate; wings hyaline, a quadrate fuscous spot beneath the stigma; a very small fuscous spot at the tip of the front wings legs castaneous, femora rufous; abdomen black, anterior ventral and lateral surface marked with rufous; ovipositor 16 mm. long. Length of whole 16 mm.

Habitat.—Canada, New Jersey.

Oleisoprister abbottii Westwood.

1843. *Aulacus abbottii* Westwood, ♀, Tr. Ent. Soc. Lond., iii, p. 266.

1901. *Pristaulacus abbottii* Ashmead, Ent. News, xii, p. 278.

"Niger, abdomine versus basin rufo; pedibus rufis, alis striga parva versus basin maculaque pone stigmata fuscis ♀.

"Caput tenuissime punctatum, pubescentia grisea parum indutum; palpi et antennæ nigri; mesothorax transverse striatus, striis anticis magis distantibus; abdomen nigrum, segmenti 1 mi apice et 2 do (apice excepto) rufis; tereba rufa, vaginis nigris apice piceis; pedes rufi, coxis nigris, trochanteribus posticis fuscis, alis pallide flavido hyalinis, striga tenui versus basin apiceque areolæ. 1 mæ submarginalis fusco, stigmate nigro."

"Long. corp. lin. 7, oviduct. lin. 8, expans. alar. lin. 11."

The author here quotes the original description, because the single specimen that he has seen is in too poor condition to describe. It is slightly smaller than Westwood's, and comes from Canada. There are but three teeth on the tarsal claws, so that its position in this group, which the author had suspected before seeing a specimen, is confirmed.

Habitat.—Georgia, Canada.

Type in British Museum.

Oleisoprister stigmaterus Cresson.

1864. *Aulacus stigmaterus* Cresson, ♀, Proc. Ent. Soc. Phila., iii, p. 134.

1901. *Pristaulacus stigmaterus* Ashmead, Ent. News, xii, p. 278.

♀.—Black; griseous pubescent; vertex smooth, a deep groove extending from the middle ocellus to the antennæ, which are black and 6.5 mm. long; mesothorax not gibbous, emargine, transverse striate; wings hyaline, a subtriangular fuscous spot beneath the stigma, and a fuscous band along the margin at the apex; legs flavous, coxæ and trochanters black, posterior femora castaneous; ab-

domen ferruginous, petiole and posterior segments black; petiole distinct; abdomen 5 mm long; ovipositor 11.5 mm. long. Length 9.5 mm.

Habitat.—New Jersey.

Type in the collection of the American Entomological Society.

AULACUS Jurine.

1807. *Aulacus* Jurine, Nouv. Meth. Hym. et. Dipt., p. 89, Taf. 7.
1873. *Aulacostethus* Philippi, Ent. Zeitg. Stettin, Jahrg., 34, p. 302.

Anterior margin of the prothorax rounded, without an acute tooth; medial mesothoracic lobe gibbous, with strongly carinate sides; wings hyaline or stained slightly yellowish fuscous, without a fuscous spot beneath the stigma. First transverse cubitus interstitial with or close to the first recurrent nervure; hind coxæ normal, tarsal claws with one tooth beneath. See Plate XI, Fig. 9.

Posterior coxæ of the ♀ with a medium sized tooth near the apex of the lower margin. Length 9 12 mm ..... **rufitarsis** Cresson.
Posterior coxæ of the ♀ with a very small tooth. Length 8 mm.
minor Cresson.

Aulacus rufitarsis Cresson.

1864. *Aulacas rufitarsis* Cresson, ♀, Proc. Ent. Soc. Phila., iii, p. 134.
1880. *Aulacus editus* Cresson, ♀, Proc. Ent. Soc. Acad. Nat. Sci. Phil., 1880, p. v.
1880. *Aulacus abdominalis* Cresson, ♀, Proc. Ent. Soc. Acad. Nat. Sci. Phil., p. v.
1883. *Aulacus bilobatus* Prov., ♂, Faun. Ent. du. Can , p. 247.
1901. *Pristaulacus rufitarsis* Ashmead, Ent. News, xii, p. 278.
1901. *Pristaulacus editus* Ashmead, Ent. News, xii, p. 278.
1901. *Pristaulacus bilobatus* Ashmead, Ent. News, xii, p. 278.

♀ ♂.—Black; vertex sparingly, face closely punctulate. Antennæ black, 6–10 mm. long; medial mesothoracic lobe gibbous, broadly not deeply emarginate, transverse striate, lateral angles carinate; wings hyaline or stained slightly yellowish; legs rufous, often darker, especially tibiæ, coxæ and trochanters black; tarsi often flavous; abdomen ferruginous, with more or less black; ovipositor 10–12 mm long. Length 9 12 mm.

Habitat.—Vancouver, Washington, Nevada, Canada, Virginia.

The author has not been able to discover any reason for keeping *rufitarsis, editus, abdominalis* and *bilobatus* separate, so he has followed Dr. Schletterer's example and grouped them together as *rufitarsis*. A fair series of specimens seems to indicate their unity.

Types in the collection of the American Entomological Society.

Aulacus minor Cresson.

1880. *Aulacus minor* Cresson, Proc. Ent. Soc. Acad. Nat. Sci. Phil., v.
1901. *Pristaulacus minor* Ashmead, Ent. News, xii, p. 278.

♀.—Black; vertex less punctured than face; antennæ black, length 6 mm.; wings hyaline; medial mesothoracic lobe gibbous, broadly not deeply emarginate,

side angles carinate; legs ferruginous, tibiæ castaneous; abdomen ferruginous, black at tip; ovipositor 8 mm. long. Length 8 8.5 mm.

♂.—Differs only in the abdomen being mostly dark.

Habitat.—Nevada.

Types in the collection of the American Entomological Society.

PAMMEGISCHIA Provancher.

1883. *Pammegischia* Prov., Fn. Ent. du. Can. Hym., ii, p. 751.
1889. *Aulacus* Schletterer, Ann. d. k. k. Nath. Hofm. Wien., iv, p. 489.

Head subtriangular, very broad behind the eyes; first cubital cell receiving the first recurrent nervure near the middle; nervures of the posterior wings obliterated, except the costal and a trace of the anal; posterior coxæ of the female greatly prolonged internally; tarsal claws with no teeth beneath. See Plate XI, Fig. 10.

This genus was founded on an interesting unique female collected by l'Abbé Burque in Quebec.

Black; legs black; first segment of abdomen red; length 7.5 mm.
xiphydriæ Ashmead.

Black; legs yellow; abdomen partly ferruginous; length 5 mm.
pallipes Cresson.

Ferruginous. Legs dusky brown to honey-yellow. Length 4 mm.
lovei Ashmead.

Yellow, including legs and abdomen.

Length 6.5 mm., wings with the marginal and first transverse nervures intersecting in or close to the stigma ..... **ouelletii** nov. spec.

Length 10 mm., wings with the marginal nervure receiving the first transverse cubitus distant from stigma..... **burquei** Provancher.

Pammegischia xiphydriæ Ashmead.

1901. *Pammegischia xiphydriæ* Ashmead, ♀, Ent. News, vol. xii, p. 278.

♀.—"Length 7.5 mm.; ovipositor about two-thirds length of the abdomen. Black, with the first segment of the abdomen red, the second joint of the front and middle trochanters and the bases of their tibiæ testaceous, the remainder of the legs black (all, however, are broken off about the middle of the tibiæ, so that I am not quite certain that the tips of the tibiæ and the tarsi are black). The head is quadrate, above smooth and highly polished, with only a few scattered punctures; in front, below the front ocellus to the insertion of the antennæ, it is transversely rugulose; while beneath the antennæ, except the lower inner angles of the malar space, which are smooth and polished, it is closely, irregularly punctate. The mandibles are black, with a rufo-piceous tinge basally. Palpi fuscous. The thorax is rugosely punctate, the mesonotum with numerous transverse ridges and complete parapsidal furrows. Wings hyaline, or at most only faintly tinged, the stigma and veins being black or brown-black, the first recurrent nervure being received by the second cubital cell only a little beyond the middle, while the third cubital cell is more or less divided into two by a spurious stump of a vein, which originates from the cubitus a little before the apex of the second

recurrent nervure. All the coxæ are black and rugulose, the hind pair being elongated and produced beneath into a triangular process that extends far beyond the insertion of the trochanters. The abdomen is highly polished, impunctate, except at its extreme base, and shaped as in *Aulacus* or *Pristaulacus*, only that it is not so distinctly petiolate, the first segment occupying fully half its whole surface."

Habitat.—Saranac Inn, New York.

Host.—Hym., *Xiphydria provancheri* Cresson, living in birch twigs (Dr. E. P. Felt).

Type.—Cat. No. 5782, U. S. Nat. Mus.

The author has not seen this species.

Pammegischia pallipes Cresson.

1879. *Aulacus pallipes* Cres., ♂, Proc. Ent. Soc. Acad. Nat. Sci. Phil., 1879, p. xvii.
1901. *Pammegischia weedi* Ashmead, ♂, Can. Ent., xxxiii, p. 301.

♂.—"Small, black; head subglobose, broad behind the the eyes, face beneath antennæ, spot beneath eyes, mandibles, except tips, antennæ and legs, except coxæ, yellow; antennæ nearly as long as the body, dusky at base above; mesothorax very feebly rugose, rounded in front, not emarginate: sides of pleura stained with dull yellowish; wings hyaline, nervures and stigma ochraceous; abdomen robust, about as long as head and thorax, slender at base, first and second segments, except base and the venter, ferruginous." Length 5 mm.

Habitat.—Massachusetts.

Type in the collection of the American Entomological Society, a single male, is in such a bad state of preservation, that the author has been obliged to quote Mr. Cresson's description instead of redescribing it.

Pammegischia lovei Ashmead.

1901. *Pammegischia lovei* Ashmead, ♀, Can. Ent., xxxiii, p. 301.

♀.—"Length 4 mm. Ferruginous; eyes, mesonotum, base of metathorax, hind coxæ toward apex, the flagellum and the ovipositor, which is a little longer than the abdomen, brown or brown-black; all femora and the hind tibiæ, except at base, dusky, rest of legs honey-yellow. Wings hyaline, the subcostal vein brown, the stigma and the rest of the veins pale ferruginous."

Habitat.—Palisades, New Jersey, collected in May by E. E. Love.

Type.—Cat. 5857, U. S. Nat. Museum.

The author has not seen this species, but he suspects that it may be the ♀ of *Pammegischia* (*Aulacus*) *pallipes* Cresson.

Pammegischia onelletii nov. spec.

♂.—Yellow, glabrous; head globular, smooth, mandibles tipped with black; antennæ yellow, 6 mm. long; medial mesothoracic lobe not gibbous nor emarginate, slightly rugose; wings hyaline, with violaceous reflection; marginal nervure receiving the first transverse cubitus within or close to the stigma, third dis-

coidal cell very long and narrow; first cubital cell receiving first recurrent nervure at or near the middle; hind wings without distinct venation; legs yellow, tarsal claws with no teeth beneath; propodeum dark, partially black; abdomen reddish yellow, 6.5 mm. long.

Habitat.—Canada.

I take pleasure in dedicating this species to Mr. C. J. Ouellet, of Montreal, who collected the type (one male) at Joliette, P. Q., Canada, July 11, 1901. It is now in the author's collection. See Plate XI, Fig. 5.

Pammegischia burquei Provancher.

1883. *Pammegischia burquei* Provancher, ♀, Fn. Ent. du. Can. Hym., ii, p. 752.
1889. *Aulacus burquei* Schletterer, ♀, Ann. d. k. k. Nath. Hofm. Wien., iv, p. 540.

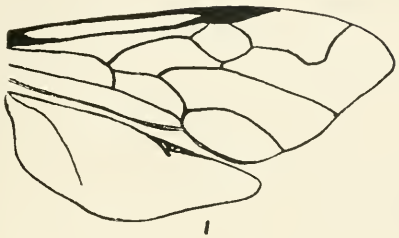
♀.—Entirely ochraceous; head glabrous, occiput polished; mesothorax scarcely gibbous, not emarginate, transverse striate; wings hyaline, nervures brownish yellow; marginal nervure receiving the first recurrent nervure distant from the stigma; petiole scarcely distinct; abdomen short; antennæ 7 mm. long. Length 10 mm.

Habitat.—Canada, one female collected in St. Hyacinth, Quebec, by l'Abbé Burque.

Type in Parliament Museum, Quebec. See Plate XI, Fig. 6.

EXPLANATION OF PLATE XI.

Fig. 1. Wings of *Evania appendigaster.*
Fig. 2. Wings of *Hyptia.*
Fig. 3. Wings of *Gasteruption.*
Fig. 4. Wings of *Aulacus rufitarsis.*
Fig. 5. Wings of *Pammegischia ouelletii.*
Fig 6. Wings of *Pammegischia burquei.*
Fig. 7. Tarsal claw of *Pristaulacus occidentalis.*
Fig. 8. Tarsal claw of *Oleisopristor firmus.*
Fig. 9. Tarsal claw of *Aulacus rufitarsis.*
Fig. 10. Tarsal claw of *Pammegischia burquei.*



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RANDOM NOTES ON NORTH AMERICAN ORTHOPTERA.

BY JAMES A. G. REHN.

The following notes have been collected while studying material in the collection of the Academy of Natural Sciences of Philadelphia, and in the private collection of the writer. Many of these notes, while not new records, refer to species apparently scarce in collections and concerning which information is desirable.

BLATTIDÆ.

Homœogamia bolliana Saussure.

1893, *Homœogamia bolliana* Saussure, Revue Suisse Zool., i, p. 297.

Three ♂; Round Mountain, Texas. Collection of the Academy.

MANTIDÆ.

Stagmomantis carolina (Johansson).

1763, *Gryllus carolinus* Johansson, Amœnit. Acad., vi, p. 396.

Two ♂; Pennsylvania. Collection of the Academy. Apparently the first Pennsylvania records.

PHASMIDÆ.

Diapheromera denticrus Stal.

1875, *Diapheromera denticrus* Stal, Recensio Orthopt., iii, p. 76.

One ♀; Texas. One ♂, ♀; Helotes, Texas; collected by G. W. Marnock. Collection of the Academy (Cope coll.). One specimen, the female from Helotes, exceeds the maximum length given by Mr. Scudder (Psyche, ix, p. 188) by 25 mm. (total length 150 mm.).

ACRIDIDÆ.

Rhadinotatum brevipenne (Thomas).

1873, *Tryxalis brevipennis* Thomas, Rep. U. S. Geol. Surv. Terr., v, p. 58.

One ♂; Miami, Dade Co., Florida, 1-12, 1899.

Two ♀; " " " 1-23, 1899, and 2-4, 1899.

Collected by S. N. and M. C. Rhoads. Collection of J. A. G. Rehn.

Syrbula admirabilis (Uhler).

1864, *Stenobothrus admirabilis* Uhler, Proc. Ent. Soc. Phila., ii, p. 553.

One ♂, Atsion, Burlington Co., New Jersey; collected by J. A.

G. Rehn. Author's collection. Only previous known record from New Jersey, Cape May (Smith, Insects of New Jersey, 1899, p. 154).

Eritettix carinatus (Scudder).

1875, *Gomphocerus carinatus* Scudder, Proc. Bost. Soc. Nat. Hist., xvii, p. 511.

One ♀; Ashbourne, Montgomery Co., Penna.; collected by J. A. G. Rehn. One ♀; Washington, D. C.; collected by Dr. Nathan Banks, June 30, 1897; August 31, 1900. One immature specimen; Rosslyn, Alexandria, Va.; collected by J. A. G. Rehn, October 22, 1900. Collection of J. A. G. Rehn.

Eretettix simplex (Scudder).

1869, *Gomphocerus simplex* Scudder, Proc. Amer. Ent. Soc., ii, p. 305.

One ♂; Delaware. Type. Collection of the Academy.

An examination of the type of this species shows that McNeill placed it in the wrong section of his generic key (Proc. Davenport Acad., vi, p. 218), the species falling under B^1 instead of B^2, the supplementary carinæ being as apparent and strongly marked as the lateral carinæ.

Hippiscus griseus Scudder.

1892, *Hippiscus griseus* Scudder, Psyche, vi, p. 274, 362.

One ♀; City Creek Canon, Utah; collected by Dr. Henry Skinner, July 4, 1899. Collection of the Academy.

This specimen is interesting in having the tibiæ and the interior and lower surface of the posterior femora sanguineous.

Spharagemon collare wyomingianum (Thomas).

1872, *Œdipoda wyomingiana* Thomas, Prelim. Rep. U. S. Geol. Surv. Mont., p. 462.

Two ♂, one ♀; Atsion, Burlington Co., New Jersey; collected by J. A. G. Rehn, September 2, 1991. Collection of J. A. G. Rehn.

Sparagemon saxatile Morse.

1894, *Spharagemon saxatile* Morse, Proc. Bost. Soc. Nat. Hist., xxvi, p. 229.

Two ♁; Ricketts, Wyoming Co., Penna.; collected by Stewardson Brown, September, 1900. Collection of J. A. G. Rehn.

This is apparently the first Pennsylvania record for this species, the specimens agree very well with cotypes in the collection of the Academy.

Trimerotropis cæruleipennis Bruner.

1885, *Trimerotropis cæruleipennis* Bruner, Canan. Ent., xvii, p. 10.

One ♂; Silver Lake, Utah; collected by Dr. Henry Skinner, July 14, 1899. Collection of the Academy.

This specimen has the hind tibiæ more glaucous than blue.

Trimerotropis cristata McNeill.

1901, *Trimerotropis cristata* McNeill, Proc. U. S. Nat. Mus., xxiii, p. 408.

One ♀; San Diego, San Diego Co., Cal.; collected by G. W. Dunn, May 3, 1899. Collection of J. A. G. Rehn.

Previously known from San Julio, Lower California and Salt Lake Valley, Utah.

Trimerotropis ferruginea McNeill ?

1901, *Trimerotropis ferruginea* McNeill, Proc. U. S. Nat. Mus., xxiii, p. 420.

Two ♂, four ♀; San Diego Co., Cal.; collected by G. W. Dunn, 1900. Cuyamaca, San Diego Co., Cal.; Dunn, October 1, 1900. Collection of J. A. G. Rehn.

These specimens are rather questionably assigned to this species. McNeill's most southern locality was American Fork Canyon, Utah.

Trimerotropis strenua McNeill.

1901, *Trimerotropis strenua* McNeill, Proc. U. S. Nat. Mus., xxiii, p. 432.

One ♀; Salt Lake City, Utah. July 15, 1897. Collection of the Academy.

This specimen agrees exactly with McNeill's description, except for the obtuse-angulate metazone, in this agreeing with *T. montana*, but as McNeill states these "may be but varieties of an exceedingly variable species."

Trimerotropis tesellata McNeill.

1901, *Trimerotropis tesellata* McNeill, Proc. U. S. Nat. Mus., xxiii, p. 417.

One ♂; Cuyamaca, San Diego Co., Cal.; collected by G. W. Dunn, October 1, 1900. Collection of J. A. G. Rehn.

This specimen agrees very well with this species, formerly known only from Turkey Tanks, Arizona.

Trimerotropis vinculata Scudder.

1876, *Trimerotropis vinculata* Scud., Proc. Bost. Soc. Nat. Hist., xviii, p. 270.

Four ♂, seven ♀; San Diego Co., Cal.; collected by G. W. Dunn, December 9, 1900. Collection of J. A. G. Rehn.

These specimens show considerable difference in tint and intensity of coloration, but all seem to be referable to this well known form.

The treatment of restricted *Trimerotropis* by McNeill in his re

cent paper on the genus (Proc. U. S. Nat. Mus., xxiii, p. 398 399) is quite inexplicable. Stal (Recensio Orthopt., i, pp. 134-135) founded the genus on *maritima* and *placida*, the latter regarded by McNeill (p. 411) as a synonym of *ochraceipennis* Blanchard. The reviser of the genus placed these two species in a new subgenus *Agonozoa*, and uses *Trimerotropis* s. s. for another subgenus. As is quite apparent *Agonozoa* is a synonym of restricted *Trimerotropis*, and a new name is necessary for McNeill's subgenus *Trimerotropis*. To supply the deficiency I propose *Pseudotrimerotropis*.

Circotettix verruculatus (Kirby).

1837, *Locusta verruculata* Kirby, Fauna Bor.-Amer., iv, p. 250.

Two ♂, one ♀; Ricketts, Wyoming Co., Pa.; collected by Stewardson Brown, September 1, 1900. Two ♀; Bellasylva, Wyoming Co., Penna.; collected by Otto Behr, August, 1900. One ♀; North Mountain (Ganoga Lake), Sullivan Co., Pa.; collected by C. W. Johnson.

The above mentioned specimens, in the collection of the writer, are the first published records of this specimens from Pennsylvania. The southern boundary of the Transition (Alleghanian) fauna probably constitutes the limit of this species.

Heliastus californicus (Thomas).

1875, *Thrincus californicus* Thomas, Bull. U. S. Geol. Surv. Terr., i, No. ser. 1, p. 66.

One ♂, three ♀; San Diego, Cal., and San Diego Co., Cal.; collected by G. W. Dunn, March 21, 1900. Collection of J. A. G. Rehn.

Schistocerca alutacea (Harris).

1841, *Acridium alutaceum* Harris, Treat. Inj. Ins., p. 139.

One ♂, two ♂; Cuyamaca, San Diego Co., Cal., September 29, 1900; San Diego Co., Cal., 1900; collected by G. W. Dunn. Collection of J. A. G. Rehn.

Schistocerca damnifica (Saussure).

1861, *Acridium damnificum* Saussure, Revue et Magas. de Zool., 2e ser., xiii, p. 164.

One ♂; Miami, Dade Co., Fla.; collected by S. N. and M. C. Rhoads, January 21, 1899. Collection of J. A. G. Rehn. Only one previous record from southern Florida is published, a specimen having been taken at Key West.

Melanoplus affinis Scudder.

1897, *Melanoplus affinis* Scudder, Proc. Amer. Philos. Soc., xxxvi, p. 20, 32.

Four ♂, three ♀; Cuyamaca, San Diego Co., Cal.; collected by G. W. Dunn, October 1, 1900. Collection of J. A. G. Rehn.

Melanoplus fasciatus (Walker).

1870, *Caloptenus fasciatus* Walker, Cat. Derm. Salt. Brit. Mus., iv, p. 680.

One ♂; Ganoga Lake, Sullivan Co., Pa.; collected by Stewardson Brown, September 2, 1900. Collection of J. A. G. Rehn.

This specimen is apparently the first Pennsylvania record, and belongs to typical *fasciatus* (*f. fasciatus* = *f. curtus Scudder*). From present known records it appears quite evident that this species inhabits the Alleghanian (Transition), Canadian and Hudsonian zones. The record from cranberry bogs at Jamesburg, N. J. (Smith, Ins. N. J., 1899, p. 156), is accounted for by the fact that such bogs have a very decidedly Alleghanian element in them.

Melanoplus punctulatus (Scudder).

1862, *Caloptenus punctulatus* Scudder, Bost. Journ. Nat. Hist., vii, p. 465.

One ♀; near Philadelphia, Pa.; collected by S. F. Aaron, September 2. Collection of the Academy.

This species has been recorded from surrounding States, but never before from Pennsylvania.

Paroxya floridiana (Thomas).

1874, *Caloptenus floridianus* Thomas, Bull. U. S. Geol. and Geogr. Surv. Terr., i, No. 2, p. 68.

One ♀; Miami, Fla.; collected by S. N. and M. C. Rhoads, January 23, 1899. Collection of J. A. G. Rehn.

Aptenopedes aptera Scudder.

1877, *Aptenopedes aptera* Scudder, Proc. Bost. Soc. Nat. Hist., xix, p. 86.

One ♂; Miami, Dade Co., Fla.; collected by S. N. and A. C. Rhoads, January 17, 1899. Collection of J. A. G. Rehn.

TETTIGONIDÆ.

Dichopetala emarginata Brunner.

1878, *Dichopetala emarginata* Brunner, Monogr. d. Phaneropt., p. 77.

One ♀; Texas. Collection of the Academy

This specimen, while structurally agreeing very well with Brunner's description (except for the larger size of the hind femora—26 mm.), shows some departure in coloration. No median white line is

visible, the lateral lines on the head and pronotum are well marked, and the deeper markings of the abdomen are black instead of reddish fuscous.

Stenopelmatus californicus Brunner.

1888, *Stenopelmatus californicus* Brunner, Verh. Zool.-bot. Gesellsch. Wien, xxxviii, p. 261.

One specimen; Pasadena, Cal.; collected by H. N. Rust. Collection of the Academy (Cope Coll.).

Stenopelmatus fasciatus Thomas.

1875, *Stenopelmatus fasciatus* Thomas, Prelim. Rep. U. S. Geol. Surv. Mont., p. 434.

Two specimens; Salt Lake City, Utah. Collection of the Academy.

In the original description of this species Thomas mentioned specimens from Utah, but none have since been obtained, with the exception of the specimens here recorded.

Stenopelmatus histrio Saussure.

1859, *Stenopelmatus histrio* Saus., Revue et Magas. de Zool., 2e ser., xi, p. 210.

Two specimens; San Francisco, Cal.; collected by L. E. Ricksecker. Collection of the Academy (Cope Coll.)

Stenopelmatus longispina Brunner.

1888, *Stenopelmatus longispina* Brunner, Verh. Zool.-bot. Gesellsch. Wien, xxxviii, p. 260.

One specimen; Texas. Collection of the Academy.

The occurrence of this species in Texas was quite unexpected, but the specimen falls quite naturally into Brunner's species.

Stenopelmatus pictus Scudder.

1899, *Stenopelmatus pictus* Scudder, Canad. Ent., xxxi, pp. 114, 116.

One specimen; San Franscico, Cal.; collected by L. E. Ricksecker. Collection of the Academy (Cope Coll.).

This specimen is topotypic, as Scudder's types came from the same locality.

The character used by Scudder (Canad. Ent., xxxi, p. 144) to separate the genus *Stenopelmatus* into two sections is apparently very unreliable. The spines on the internal margin of the posterior tibiæ in the specimens before me (twenty-three in number) present many discrepancies from Scudder's key. In some specimens the number on opposite limbs are not the same, and in a few cases the spines are almost invisible, though the specimens can, by all other characters, be referred to a species normally possessing prominent spines.

Hadenœcus cavernarum (Saussure).

1860, *Rhaphidophora carenarum* Saussure, Ann. Soc. Ent. Fr. (4), i, p. 492.

A male specimen of this species from Mammoth Cave, Kentucky, differs from another male from the same locality, and approaches *H. puteanus* in having the subgenital plate rather narrowly emarginate at the apex.

Diahinia brevipes Haldeman.

1850, *Phalangopsis* (*Diahinia*) *brevipes* Haldeman, Proc Amer. Asso. Adv. Sci., ii, p. 346.

One ♂, two ♀; North Dakota. Collection of the Academy.

These specimens extend the range of the species, no specimens having been previously recorded north of South Dakota. Nine specimens of this species examined by the writer, all agree in having the third tarsal joint of the fore and hind legs absent as noticed by Scudder (Proc. Amer. Acad. Arts Sci., xxx, p. 108) in a series of fourteen.

GRYLLIDÆ.

Œcanthus pini Beutenmüller.

1894, *Œcanthus pini* Beutenmüller, Journ. N. Y. Ent. Soc., ii, p. 56.

Four specimens, one ♂, two ♀, one immature; Chestertown, Kent Co., Md.; collected by E. G. Vanatta, August 17, 23 and 27, 1899. Collection of the Academy.

The most southern point from which this species has been previously recorded is Riverton, Burlington County, New Jersey (vide Smith, Insects N. J., 1899, p. 165).

Œcanthus quadrimaculatus Beutenmüller.

1894, *Œcanthus quadrimaculatus* Beutenmüller, Bull. Amer. Mus. Nat. Hist., vi, pp. 250, 271.

One ♂; Chestertown, Kent County, Md.; collected by E. G. Vanatta, August 23, 1899. Collection of the Academy. The remarks made under the preceding species also apply to this form.

Anaxipha exigua (Say).

1825, *Acheta exigua* Say, Journ. Acad. Nat. Sci. Phila., iv, p. 309.

Five specimens, two ♂, one ♀, two immature; Delaware and Pennsylvania. Collection of the Academy.

Phylloscirtus pulchellus (Uhler).

1864, *Phyllopalpus pulchellus* Uhler, Proc. Ent. Soc. Phila., ii, p. 544.

Nine specimens, two ♂, seven ♀; Maryland, Delaware and Pennsylvania. Chestertown, Kent Co., Md.; collected by E. G. Vanatta, Aug. 17, 22, 25, 26, 29, 1899. Collection of the Academy.

New Species of the Subfamily PSENINÆ.

BY HENRY L. VIERECK.

In Can. Ent., xxxi, 223 224, Mr. W. H. Ashmead has tabulated four genera belonging to this subfamily.

According to the recognized rules of Zoological Nomenclature, *Sphex atra* Fabr. is the legitimate type of the genus *Psen* being first designated as such by Latreille himself.

From this point of view it is necessary to revise the names of two and give a new name to one of the divisions in the table referred to.

The following table is intended to show the genuine types of the four groups, and is as will be seen (excepting names, synonomy and types) a copy of Mr. W. H. Ashmead's table of the Pseninæ referred to above:

Cubitus in hind wings originating *beyond* the transverse median nervure, the latter short and straight, perpendicular .....2.

Cubitus in hind wings originating *before* the transverse median nervure, the latter long and oblique or slightly bent, but *not* perpendicular.

Second cubital cell receiving both recurrent nervures, *rarely* with the first recurrent nervure interstitial with the first transverse cubitus, or the second recurrent interstitial with the second transverse cubitus; inner spur of hind tibiæ dilated; metathorax with a median sulcus, the area at base striate or alveolate; petiole of abdomen long, usually furrowed laterally; clypeus convex or subconvex, separated, anteriorly more or less rounded, and with a slight vein, but without a median sinus; labrum hidden.....**Mimesa** Schuckard.

= *Aporia* Wesm.

[Type *Impoxylon equestrie* Fabr.]

Second and third cubital cells each receiving a recurrent nervure, or the first recurrent nervure is interstitial with the first transverse cubitus; head with a spine between the antennæ; clypeus anteriorly rimmed with a median sinus.....**Psen** Latreille.

= *Dahlbomia* Wissm.

= *Mesopora* Wesm.

[Type *Sphex atra* Fabr.]

2. Submedian cell in front wings a little shorter than the median, the transverse median nervure being not quite interstitial with the basal nervure; second cubital cell usually much narrower above.

Second and third cubital cells each receiving a recurrent nervure, rarely with the first recurrent nervure interstitial with the first transverse cubitus.....**Neofoxia** Vier. n. n.*

Psen Ashm. not Latr.

[Type *Psen atrata* Pz.]

Second cubital cell receiving both recurrent nervures....**Psenulus** Kohl.

[Type *Psen fuscipennis* Dahlb.

* Named after Mr. W. J. Fox of the Academy of Natural Sciences, Philadelphia, in recognition of his valuable contributions to American Hymenopterology.

Mimesa regularis Fox.

Psen regularis Fox, Trans. Am. Ent. Soc., xxv, 6, ♀, 1898.

"Antennæ (flagella missing)." Antennæ reaching to the middle of the thorax, flagellum thickened more than in *M. niger*. First joint of the flagellum about one-third longer than the second. Two ♀ North Mountain, Sullivan County, Pa. (C. W. Johnson.)

Mimesa striatus n. sp.

Dorsulum longitudinally striate, enclosure of metathorax smooth, petiole slender and narrow. ♀. Length 8 mm.

Head shining, front with fine somewhat separated punctures, closest near base of antennæ, vertex with very fine transverse striæ. Space between posterior ocelli seemingly less than space between ocelli and nearest eye margin. Front with a well-defined median carina extending from middle of space between insertion of the antennæ to anterior ocellus. Face and clypeus with dense silvery pubescence, as in *Cylindricus*, on the cheeks less dense, silvery, the rest of the head with sparse very short hairs. Antennæ slender at base, gradually thickened to the apex, first joint of the flagellum almost as long as the second and third united. Dorsulum with close, fine, longitudinal striæ. Mesopleuræ minutely striate, sericeus. Scutellum glossy, sparsely punctured, postscutellum with a tuft of white pubescence laterally. Enclosure of metathorax with a somewhat diamond shaped, shining area, the upper boundaries of which are formed by well-marked ridges, followed on each side by at least two other ridges, the spaces between also smooth, the rest of the metathorax dull, reticulated, posterior face with sparse, slender hairs, a tuft of pubescence at base laterally. Wings hyaline, nervures brownish, first and second transverse cubitus almost uniting on the marginal nervure, second cubital cell receiving the first recurrent nervure a little less than one-third its length from the first transverse cubitus, the second recurrent nervure almost interstitial with the second transverse cubitus. Femora and tibiæ sericeus, posterior tibiæ with short stiff hairs behind. Tarsi with yellowish pubescence. Petiole distinctly trisulcate, longer than the posterior femora, slender, of almost equal width throughout. Abdomen smooth, polished, with exception of first segment thinly sericeus. Pygidial area narrower apically than in *cylindricus*, with strong punctures laterally, impunctate medially, not polished and with long sparse hairs.

Black. Antennæ seal-brown. Tibial spurs whitish, tarsi changing from whitish at base to brownish testaceous at apex.

Related to *regularis* and *cylindricus*, to the former by its smooth metathoracic enclosure, to the latter by its slender, narrow petiole. Readily distinguished by the striate dorsulum.

Type in collection H. L. Viereck. Type locality, Westville, N. J., August 30, 1899 (H. L. Viereck). A specimen from Avalon, N. J., June 9 (C. W. Johnson) is referred with doubt to this species.

Since the above was written a specimen of this species has been found in collection Am. Ent. Soc., labelled Fla. ♀.

Mimesa niger Pack.

Psen niger Pack., Proc. Ent. Soc. Phil., vi, 399, ♀ (excl. ♂), 1867.

One ♂, Lehigh Gap, Lehigh County, Pa., July 12, 1900 (H. L. Viereck).

Mimesa longicornis Fox.

Psen longicornis Fox, Trans. Am. Ent. Soc., xxv, 6, ♂, 1898.

One ♂, Westville, N. J., August 30, 1899 (H. L. Viereck).

Mimesa johnsoni n. sp.

Joints of flagellum ♂ not bulged outward, dorsulum punctate to striato-punctate, metathorax with a smooth area, otherwise coarsely reticulated.

♀.—Length 8.5 mm. Head polished with moderately strong evenly spaced punctures, closer in front of ocelli than behind, a raised line extending from a prominence between the antennæ at base to the anterior ocellus, well defined on its lower half less so above. Posterior ocelli in pits, space between posterior pair plainly less than that between them and nearest eye margin. Face and clypeus thickly covered with golden pubescence, on cheeks sparse, concolorous with that on face, rest of the head with sparse golden hairs. Antennæ with the first joint of the flagellum slender, not as long as joints two and three united, flagellum becoming gradually thickened to decidedly at middle and beyond.

Dorsulum coarsely punctured, somewhat confluently, a longitudinal impressed line on each side extending from just in front of the middle to the posterior border of the dorsulum. Mesopleuræ polished, with a few distinct punctures and sparse pale pubescence. Scutellum strongly punctate. Enclosure of metathorax triangular, apex truncated, a hexagonal smooth area with its anterior lateral margins formed by oblique ridges, followed by other oblique ridges to the apexes, space between narrow and smooth, the rest of the metathorax coarsely reticulated. Postscutellum laterally, middle segment at the base laterally, with a patch of long yellowish hairs. Wings hyaline, faintly fuscous, the marginal cell darkest, nervures dark brown, testaceous at base of wing. First and second transverse cubital nervures well separated on the radial nervure, first recurrent nervure received by the second cubital cell about one-fourth its length beyond the first transverse cubitus, second recurrent nervure received about one-fifth of its length before the second transverse cubitus. Femora and tibiæ sericeous, tarsi with golden pubescence. Petiole longer than posterior femor, broadened, wider at apex than at base, distinctly trisulcate, median sulcus smooth, with slender erect pale hairs. Abdomen smooth and shining, apical half of segments two, three, four sericeous, fifth segment and pygidium with sparse golden hairs. Length of pygidial area more than twice the width. Smooth and polished medially, laterally with a row of deep punctures. Black, tibiæ ferruginous, with a dark spot dorsally, tarsi and spurs honey-yellow. Antennæ seal-brown, underside of joints one and two of the flagellum ferruginous.

♂.—Length 8.5 mm. Head punctured a little closer than in ♀. Face and clypeus covered with silvery pubescence, about the same length as in the other sex. Space aside and between the scape with sparse pubescence, tinged with yellow. Space between hind ocelli less than that between them and nearest eye margin. Antennæ as long as head and thorax, slender, of almost equal width throughout, first joint of the flagellum a little less than one-third longer than the second. Pro-

notum furrowed, sericeous, dorsulum striato-punctate. Scutellum sparsely punctate. Tubercles and postscutellum laterally with a tuft of long yellowish pubescence. Metathorax sculptured, coarser than in ♂, smooth area well developed, covered with erect silvery pubescence. Mesopleuræ and underside of femora sericeous. Space between first and second transverse cubitals on radial nervure variable, small, second recurrent nervure almost interstitial with the second transverse cubitus. Petiole distinctly trisulcate, with sparse erect hairs. Abdomen shining, first segment almost base, the rest silvery sericeous. Black. Underside of joints one, two, three and four of the flagellum ferruginous below, above and the rest of the joints entirely seal-brown. Tegulæ and base of the wings testaceous, spurs and tarsi whitish.

Related to *mellipes* Say ♂ (as determined by Mr. Fox), from which it differs in having joints of flagellum simple, coarser in sculpture of metathorax and larger size.

Type in collection H. L. Viereck. Type locality, ♂, Riverton, N. J., June 10 (C. W. Johnson); ♀, Lehigh Gap, Lehigh County, Pa., July 14, 1899 (Viereck). Dedicated to Mr. Chas. W. Johnson.

Mimesa ferruginea n. sp.

Head coarsely punctured, dorsulum confluently punctured, metathorax coarsely reticulated, ferruginous, as is the petiole and greater part of first two abdominal segments.

♂.—Length 12 mm. Head closely and strongly punctate, punctures on vertex coarser and sparser, impressions behind posterior ocelli marked and shining. Clypeus tridentate, its surface covered with rather long silvery tinged with yellow, pubescence, which extends up on the face somewhat above insertion of antennæ, front and vertex, with sparse, long, yellowish pubescence, cheeks silvery sericeous. Antennæ somewhat longer than head and thorax, slightly flattened and dilated beyond the middle, joints four to nine of the antennæ curved outwardly, anteriorly impressed above just within the margin. Prothorax with a transverse channel, angled anteriorly and covered with golden apressed pubescence. Dorsulum coarsely striato punctate, with an impressed line starting at the middle of each side and runs to posterior margin, scutellum strongly punctured. Metathorax reticulate, impressed at base medially, the pits large and shallow, mesopleuræ confluently punctured, covered with short silvery pubescence, tegulæ and postscutellum with long, gold-tinted erect pubescence, to each side of metathoracic impression there is a patch of erect silvery or gold-tinted pubescence. Wings strongly tinged with yellowish brown, first recurrent nervure received by the second submarginal cell just before the middle, the second recurrent nervure received a little less than one-fourth the length of the cell before the second transverse cubitus, tegulæ and base of wings testaceous, stigma a tawny olive, nervures dark. Petiole longer than posterior femor, rounded above, smooth and shining, slightly flattened at base, first abdominal segment smooth and comparatively bare, segments two, three, four sparsely sericeous on apical half, the rest of the segments apparently entirely sericeous.

Color: Joints one, two, three, four and part of five of flagellum dull ferruginous, scape shining ferruginous, the rest of the joints seal-brown. Legs shining,

dark testaceous, calcariæ whitish. Tubercles, metathorax, petiole and second abdominal segments (with exception of a piceous border) claret-brown or ferruginous, first segment also mottled with blackish spots.

Differs from *kohlii* (to which it appears to be related) by its larger size, longer antennæ, more rounded antennal joints, the coarser punctuation of the head by its coloration.

Type deposited in collection Am. Ent. Soc., by Mr. W. J. Fox. Type locality, Biscayne Bay, Fla. (Mrs. Slosson).

Mimesa cressonii Pack.

Psen cressonii Fox, Trans. Am. Ent. Soc., xxv, 12, ♀ ♂.

One ♂, Hertford, County, N. C., June 9, 1895 (C. W. Johnson); two ♂, Camden County, N. J., September 22, 1901, on flowers of Aster (Viereck).

Mimesa maculipes Fox.

Psen maculipes Fox, Trans. Am. Ent. Soc., xxv, ♂.

One ♂, North Woodbury, N. J., June 13, 1901 (Viereck).

LIST OF NORTH AMERICAN SPECIES

MIMESA Shuckard.

M. cylindricus *Fox* ♀ ♂.
M. niger *Pack.* ♀ ♂.
M. regularis *Fox* ♀.
M. striatas *Vier.* ♀.
M. mixta *Fox* ♀ ♂.
M. leucops *Say* ♀ ♂.
M. longicornis *Fox* ♂.
M. mellipes *Say* ♀ ♂.
M. johnsoni *Vier.* ♀ ♂.
M. kohlii *Fox* ♀ ♂.
M. ferruginea *Vier.* ♂.
M. punctata *Fox* ♀.
M. simplicicornis *Fox* ♀ ♂.
M. fuscipes *Pack.* ♀.
M. argentifrons *Cress.* ♀ ♂.
M. cressonii *Pack.* ♀ ♂.
M. chalcifrons *Pack.* ♀.
M. borealis *Sm.* ♀ ♂.
M. pauper *Pack.* ♀ ♂.
M. cingulata *Pack.* ♂.
M. unicincta *Cress.* ♀ ♂.
M. clypeata *Fox* ♀ ♂.
M. granulosa *Fox* ♂.
M. gregaria *Fox* ♂.
M. proxima *Cress.* ♀.
M. basirufa *Pack.* ♀ ♂.
M. maculipes *Fox* ♂.
M. mexicana *Cam.* ♀.
M. pulchra *Cam.* ♀.
M. striolata *Cam.* ♀.
M. longiventris *Cam.* ♀.
M. monticola *Cam.* ♀.
M. montezuma *Cam.* ♀.
M. claviventris *Cam.* ♀.

PSEN Latreille.

P. monticola *Pack.* ♀ ♂.
P. annulipes *Cam.*

NEOFOXIA Vier.

N. frontalis *Fox* ♀.
N. trisulcus *Fox* ♀.
N. tibialis *Cress.* ♀ ♂.
N. suffusus *Fox* ♀.

PSENULUS Kohl.

(None.)

NOTES ON SOME HEMIPTERA FROM BRITISH GUIANA.

BY EDWARD P. VAN DUZEE.

During the past summer I have been receiving from Mr. R. J. Crew certain families of the Heteroptera collected by him about Bartica, British Guiana. So few collections in this order have been reported from this interesting country, it seemed to me that an annotated list of the material received might be of value especially as this list includes the names of some species not before recorded from that district. In addition to the 89 species here recorded the lot included some forms I have as yet been unable to place satisfactorily. The species are arranged nearly as in Lethierry and Sevrin's Catalogue.

Superfamily **PENTATOMOIDEA.**

Corimelæna tibialis Fabr.—April, May and Sept., three examples. A tiny little species about half the size of *pulicaria* which it somewhat resembles.

Corimelæna Daldorfi Fabr.—March, May and Sept., five examples. Apparently common. A pretty species variegated with orange and black.

Corimelæna spp.—There are in this lot several examples representing two species both closely allied to *notatipennis* Stal, but wanting the pale spots at the apex of the corium. More material and further study is necessary to properly locate these species.

Corimelæna rastrata Stal.—March, May and September, five examples.

Corimelæna Schmidti Fabr.—Many examples taken from May to September. This species pertains to the section of the genus having the scutellum shorter than the abdomen. I place it here with hesitation. It agrees well with Stal's description in the Hemiptera Fabriciana except that it has the additional pale point at the apical angle of the elytra as described by Germar. But Germar's species has the long scutellum and has been named *notatipennis* by Stal. This species is so well represented in the material sent by Mr. Crew that I cannot

believe it still undescribed. The small point on the corium may be wanting at times as it is almost obsolete in some of the specimens before me.

Camirus conicus Germ.—Numbers taken in April, May and September. This species closely resembles *Sphyrocoris obliquus*.

Dryptocephala livida H. S.—One example taken May 27th.

Discocephala terminalis Walker.—One specimen taken April 12th agrees in every particular with Walker's description, which in this case is excellent.

Discocephala umbraculata Fabr.—April. Three examples.

Coriplatus depressus White.—May 8th. One example. This agrees very closely with White's description, but disagrees with his figure in having the posterior tooth on the side of the pronotum broad-triangular, acute at tip, and directed horizontally outward, not narrow and curved backward. Further material may show it to be a distinct species.

Mormidea ypsilon Linn.—Large numbers taken from March to June. Two smaller and distinct species are in the lot which I have not yet been able to identify.

Galedanta myops Fabr.—May 27th. One example.

Sibara armata Dall.—Several, taken from May to September. This is a trim little species with sharp thoracic angles. It is almost black above, with two white points on the pronotum, three on the base of the scutellum, and one on the disk of each elytron.

Euschistus acutus Dall.—March to August. Apparently abundant. Superficially this species resembles the preceding but it is proportionately broader, paler, and without the white dots.

Euschistus heros Fabr.—March to September. Several specimens that I have placed here are still broader and paler than the foregoing with the sharp thoracic angles black. They resemble *crenator* but are larger, and the last ventral segment of the male is trisinuate exactly as described by Stal in his *trisinuatus*. As these males correspond in other respects with the short diagnosis of *trisinuatus* given by Stal, I strongly suspect that this species may be identical with *heros*. If there be any distinguishing characters Stal has failed to indicate them. Another species in this genus is represented by five examples. It may be still undescribed.

Loxa flavicollis Drury.—One specimen taken June 10th.

Loxa deducta Walker.—A very neat pretty little species of

about the size and general aspect of our northern *Nezara hilaris*, but with sharp thoracic angles. One specimen, May 23d.

Arocera apta Walker.—One example, taken August 12th. My specimen is a little larger with the ground color more distinctly yellow than in Distant's figure in the Biologia.

Banasa alboapicata Stal.—April and July. Three examples. There is also in this lot two specimens of a second species of *Banasa* I have not yet been able to determine.

Arvelius albopunctatus De Geer.—Two examples, taken in June. These are unusually large and dark colored.

Taurocerus edessoides Spinola.—Two taken in May and August. This is a very pretty mahogany-colored species with a yellow tip to the scutellum and elytral horns.

Brachystethus cribrum Fabr.—Two examples, taken in March.

Edessa moschus Erich.—I have about a dozen examples of this very pretty species taken in May and June. It is about the size of *metatibunda* with the pronotal angles produced in long terete horns which point well backward and upward. The color is bright clear green above with the tips of the humeral horns black, the elytra dull chestnut with a paler costa, and the legs and antennæ rufous, inclined to yellow. Beneath yellowish with the sutures and a short parallel vitta within the stigmata clear green; there is also an indication of a median line, and an oblique vitta either side of it, dull green.

Edessa quadridens Fabr.—Numbers of this species were taken from April to September. These all agree in having a narrow white line on the base of the scutellum.

Edessa discors Erich.—I have one male taken June 10th that I identify with this species with little hesitation. It is a trifle larger than *metatibunda* and less densely punctate on the pronotum and scutellum. The outer angles of the pronotum are sharper with the lateral margins straight and the hind edge more deeply concave before the scutellum. The edge of the abdomen is much more strongly toothed at each segment, even more strongly than in *quadridens*. Color light clear green on the head, pronotum and scutellum. Head with narrow edges and an almost obsolete median line yellow. Elytra castaneous, as in *metatibunda* with the nervures pale; antennæ

and legs rufous; body beneath dull reddish yellow with the slender sutures and an abbreviated line between them within the stigmata, brown. Above the margins of the abdomen are broadly exposed beyond the elytra, brown, inclined to chestnut toward the margins, and strongly pitted near the incisures. The scutellum is proportionately longer and more impressed each side at tip than in *metatibunda*. This is slightly smaller and a very different insect from *Edessa Petersi* of Distant. The latter is much more convex, less strongly and thickly punctured above, with blunter pronotal angles, a shorter and wider scutellum, and the edge of the abdomen is much lesss strongly toothed. The color too is very different. I possess one specimen, certainly *Petersi*, from Mexico.

Edessa metatibunda Thunbg.—Two examples, taken in May. This species seems to be more abundant in Brazil.

Edessa corallipes Erich.—One example, taken June 28th, seems to answer perfectly to Erichson's short description. It is a little smaller than the preceding, of a rich chestnut brown, showing in some lights a coppery green reflection on the head, pronotum and scutellum. The pronotum and scutellum are remotely and deeply punctured. The humeral angles are sharp but less produced than in *quadridens*, apex of the scutellum broader than in *quadridens* and rather more strongly impressed before the acute tip. The elytra are dull, almost yellowish brown, with an obsolete darker patch before the middle, behind which is an indistinct paler Y-shaped mark on the nervures; legs light rufous; antennæ paler.

Piezosternum subulatum Fabr.—Two examples, taken in May.

Discocera ochrocyanea Lep.—A very pretty species of which there is one specimen in this lot, May 6th. This disagrees with the description of Amyot and Serville in having the deep blue disk of the pronotum divided by a longitudinal line.

Family COREIDÆ.

Spathophora biclavata Fabr.—Three examples of this large showy insect were taken in April, May and September.

Pachylis nervosus Dall.—April and May, three examples.

Molchina compressicornis Fabr.—A magnificent species of which one specimen was taken on May 7th.

Melucha lineatella Fabr.—Numbers taken from March to August.

Nematopus indus Linn.—March to September. Judging from the numbers received a very abundant species.

Nematopus fasciatus Westw.—One example, taken March 28th. This handsome species is black above with a broad orange band across the middle of the pronotum; margin of the scutellum, hind edge of the pronotum, and elytral veins whitish. Legs, antennæ, and all beneath fulvous brown, with the tip of the hind femora and abdomen black.

Acanthocephala latipes Drury.—March, April and August. The white band on the front of the pronotum seems to be quite characteristic.

Petalops thoracicus Thunbg.—Several examples of this brilliantly colored species were taken from April to August.

Holymenia intermedia Burm.—Two examples, May and July The hyaline elytra and spotted thorax gives this species a superficial resemblance to certain Hymenoptera. It is a little smaller than *histrio* which I have from Brazil, and may be distinguished by the partly white third joint of the antennæ.

Leptoscelis bipustulatus Linn.—March to June. Apparently common. In some examples the whitish color of the elytra is deepened to fulvous or almost orange.

Hypselonotus fulvus De Geer.—Two examples of this widely distributed species were taken in June.

Paryphes lætus Fabr.—March to June. This is a large showy species marked with broad yellow belt on a dark green ground color.

Paryphes regalis Westw.—One specimen taken August 14th, agrees very closely with the short descriptions of Westwood and Amyot, except that the thorax is entirely fulvous; not black behind as described by them. This specimen is a female as was Amyot's.

Trachelium tessellatum Dist.—Two examples taken in May agree very nearly with Distant's description. The ground color is a shining piceous black, with the legs and apical joints of the antennæ paler.

Cydamus adspersipes Stal.—Several taken from April to June.

Cydamus trispinosus De Geer.—Four examples taken April 2d.

Leptocorisa filiformis Fabr.—April 27th. Two examples.

Hyalymenus tarsatus Fabr.—April and May. Apparently common. There are several variations in color from fulvous brown to deep black which may represent two or more distinct species.

Hyalymenus vespiformis Fabr.—I have one male and two females that I place here. The male has the head and thorax reddish and the hind femora black, and on the sides of the third abdominal segment there is a small spine. In the females the head and thorax are black, marked with white just as described by Stal in *gracilispinus*, but the hind angles of the pronotum are not produced, and the apical joint of the antennæ is white.

Jadera sanguinolenta Fabr.—One example, taken in May.

Family LYGÆIDÆ.

Lygæus variegatus De Geer.—June. Three examples.

Lygæus modestus Stal.—April. Two examples.

Lygæus dispar Stal.—March to May. Apparently abundant.

Œdancala notata Stal.—March and April. Like the last, received in large numbers.

Pamera serripes Dallas.—April and May. Several examples.

Pamera consuta Dallas.—Three examples, April to June.

Pamera globiceps Stal.—April and March. Received in large numbers.

Pamera parvula Dallas.—March and April.

Family TINGIDÆ.

Telonemia validicornis Stal?—One example, taken April 13th, wants the apical half of each antenna, but I feel little doubt about the determination.

Family ARADIDÆ.

Dysodius lunatus Linn.—Two examples, taken April 10th.

Hesus cordatus Fabr.—One specimen, taken August 18th, I have placed here, although I am by no means certain that it may not be either *flaviventris* or *acuminatus*. In form and marking it agrees exactly with Distant's figure of *subarmatus*, except that it has no indication of the tubercle on the edge of the anterior lobe of the pronotum. In color it is black above, marked with ferruginous on

the broadly expanded margins of the tergum, and there is a pale spot on the outer basal angle of the membrane. The fourth joint of the antennæ is not longer than the second and is paler on its conical tip, and the base of the first joint is pale within. The third joint of the antennæ and the tibiæ are without pale annulations.

Brachyrhynchus sp.—One specimen, taken June 1st, agrees very closely with the figure of *B. Handlirschi* in the Biologia. The form of the head and pronotum correspond exactly. The basal joint of the antennæ is also the same, and the apical margin of the elytra has the same emargination. This insect, however, is of the usual blackish brown color, and shows no indication of the ochraceous incrustation mentioned by Prof. Distant. It is a male.

Family REDUVIIDÆ.

Pygolampis spurca Stal.—I have in my hand one male of this genus from Demerara, one male from Texas, and one female from Florida. The two latter agree in having the basal joint of the antennæ proportionately shorter, distinctly shorter than the pronotum; the Demerara example has this joint as long as the pronotum and half of the head. Compared with the Texan male it has the pronotum blackish throughout, not on the borders only, the elytra paler, the hind femora darker and more distinctly irrorate with pale; the rostrum pale with a black tip, not blackish with a pale base; the two anterior pairs of tibiæ are less distinctly banded; the lower surface is less broadly infuscated along the median line; the polished black vitta on each side of the metasternum is shorter, and the apical segment of abdomen exceeds the elytra, with the terminal lobes less rounded, almost subacute. The specimen from Demerara I have called *spurca* and that from Texas and the female from Florida *pectoralis*, although the Texan male agrees much more closely with the description of the male of *spurca* given by Distant in the Biologia.

Stenopoda culiciformis Fabr.—One quite typical example taken in May.

Gnathobleda letigiosa Stal.—One female, taken June 17th. This specimen answers well to Stal's description, but is rather more strongly colored and has two black points on the disk of the corium. The pronotum has the sides posteriorly, and a broad median vitta, fuscous.

Narvesus sp.—June 12th. The one example received looks very like a strongly colored specimen of *carolinensis*, but the anterior angles of the pronotum are less produced and the apex of the head has two long porrect tubercles almost attaining the middle of the basal joint of the antennæ, quite in contrast with the acute spines in *carolinensis*. This specimen also differs in having the basal joint of the rostrum distinctly longer than the second. The antennæ are hairy but the legs are smooth except for very short hairs on the tibiæ. It may represent a new genus.

There is another apparently undescribed insect in this lot. It is a large fine species with the apical segment of the abdomen produced into two rounded divergent lobes. In most characters it comes very close to genus *Shaumannia* Distant.

Bactrodes femoratus Fabr.—April 12th, one example.

Leogorrus litura Fabr.—May. Two examples.

Macrophthalmus pallens Lap.—Five examples, taken in August. This is a very neat and graceful little insect of a mixed warm brown and gray color. The short and comparative descriptions given by all writers who have mentioned this species and *histrionicus* makes it impossible for me to be absolutely sure where to place the present form. I believe, howevever, it is correctly located here.

Spiniger spinidorsis Gray.—May to August. The five examples received have the tips of the thoracic spines black, otherwise they seem to be typical. The elytra are of a rich ochre brown shading to black at the costal base.

Spiniger nigripennis Stal.—Two examles, taken in May and August, agree with Stal's description in every respect except that the pale markings of the elytral nervures are scarcely discernable.

Pothea frontalis Lep.—A beautiful black species bordered with orange.

Ectrichodia immarginata Stal.—One specimen of this fine species was taken August 18th. It is smaller and narrower than *lateralis* of which I possess an example from Brazil. The latter may also be distinguished by the rugose posterior lobe of the pronotum, and by having the margin of the abdomen, tip of the scutellum, and a point on the hind edge of the corium rufous.

Apiomerus lanipes Fabr.—May to August.

Apiomerus geniculatus Erich.—Two females of the black

variety. They have the knees, tibiæ, anterior excepted, and in one case the connexivum obscure reddish piceous. The anal lobes are dull sanguineous and the hind angles of the pronotum are very pale.

Apiomerus nitidicollis Stal.—One specimen. This has the intermediate feet entirely pale, and a pale spot covers the inner field of the corium across which the veins are black.

Micrauchenus lineola Fabr.—A beautiful species of which a number of specimens were received.

Calliclapius nigripes Linn —This species resembles the preceding in being intensely black with a sanguineous tip to the elytra, but this is a more slender insect with the areoles of the membrane subhyaline. The antennæ, except the basal joint, and the two hind pairs of legs are rufous, and the head is differently shaped.

Heniartes flavicans Fabr.—Easily distinguished by the two silvery spots on the base of the scutellum. It is rufous with the head and apical half of the elytra black. The hairy legs are even more abundantly supplied with a sticky exhudation than in *Apiomerus*. It seems to be common about Demerara.

Diplodus dispar Fabr.—One female I place here with little doubt. The tips of the femora and a narrow ring a little below are black. The abdomen is sanguineous above and yellowish beneath, with the apex and four dots on each side of the venter black. The thoracic spines are short, sharp and abrupt. Another specimen, probably a male of this, has the disk of the thorax and scutellum dull rufous. Below it is pale with the tip of the abdomen black. Here the thoracic spines are reduced to mere tubercles.

Diplodus erythrocephalus Fabr.—Several examples received. The females are beautiful insects with a red head and steel blue elytra. The males are paler with fuscous elytra wanting the blue reflections. The head is yellowish, clouded above and marked with two fuscous lines behind the eyes which touch the ocelli and converge to the base of the head. Venter in both sexes with a pale carina. In the females the fifth and sixth segments have a white farinaceous band on each side. The two hind pair of femora in the males are annulated with pale near their base. There are two other species of *Diplodus* in this lot that I have not yet been able to identify. One is near *pedestris* Fabr.

Notocyrtus gibbus Fabr.—Several specimens.

Cosmonyttus ichneumoneus Fabr.—May and June. Three examples.

Amaurosphodrus sp —One example of an apparently undescribed species is in the lot.

Corcia spinosa Fabr.—One male, taken April 8th. The thorax below has three farinaceous vittæ, and the venter has a broad fuscous lateral vitta and a narrow median black one.

Ricolla 4-spinosa Linn.—April and May. Several examples.

Plæogaster elevatus Fabr.—One example, taken April 9th.

Plæogaster socius Stal.—One female, taken April 1st. The dark sanguineous elytra dotted with white readily distinguishes this very pretty species.

Mononyx nepæformis Fabr.—One specimen, taken June 25th.

DESCRIPTION OF NINE NEW BOLIVIAN BUTTERFLIES.

BY A. G. WEEKS, JR.

Adelpha deborah sp. nov.

Expanse 2 inches.—Head, thorax, palpi, abdomen and legs rich brown above; white beneath. Antennæ black, tipped with brown.

General ground color of upper surface dark brown, as in nearly all species of this group.

The forewing is crossed by a very prominent band of tawny color running from centre of costa downwards, touching end of discoidal space, and striking inner margin one-third distance from lower angle to base. The portion opposite the lower end of discoidal space extends outwards towards hind margin. The veins crossing the bands are distinctly marked, being dark brown. One-sixteenth inch within hind margin is an irregular black line following contour of the margin, and within this is a suffused band of a color slightly lighter than ground color, somewhat indistinct. The space between this and the tawny band, including the apical area, is of the ground color. The basal area within the tawny band is of the ground color, crossed by black lines as follows: in discoidal space a line starts from median nervure, very near the base, and runs upwards, striking the subcostal nervure, and then turns abruptly downwards across centre of discoidal space; below, in next interspace, this line forms two small circles, one above the other. Across outer portion of discoidal space run two parallel black lines.

The lower wing is crossed by three parallel bands, somewhat lighter than ground color, starting at costa near apex and joining at anal angle. Within hind margin, midway to the first of these bands, is an indistinct line of the same color following the dentations of the margin. There is a fourth and broader band within the three mentioned, running from centre of costa, terminating also at anal angle, but it is very indistinct. The basal portion of wing is of ground color, excepting a very indistinct band of darkish across the discoidal space. Just above the anal angle, one may say *at* the anal angle, is a tawny spot.

The under surface is generally blackish, marked with white and tawny.

On underside of forewing, the first half of costa from base upwards, is tawny. From the base, in discoidal space, is a dash of white extending along the subcostal nervure; outside of this the discoidal space is crossed by a white triangle, surrounded by a black line; the balance of discoidal space is dark tawny crossed by a very prominent spot or band of silvery white with a black border. There is a very small white dot also at lower outer end of the space, surrounded by black. The tawny band of the upper surface is white, but is encroached upon, and so lessened in extent, by the suffusion of the blackish ground color. Within the hind margin appear the line and band noted on upper surface, but at the apex and lower angle, for the first three interspaces, these are white. The basal

area below the discoidal space and within the main band, is crossed by two broad white bands.

The under side of hind wing is crossed at its centre by a prominent silvery white band running from centre of costa nearly to anal angle, forming an extension of the band on the forewing. This is the band which appears so indistinctly on upper side within the three first bands there noted. Outside of this band the ground color is blackish, crossed by three bands of white dusted with tawny as they approach anal angle. The outer one of these is broad and distinct, broken by the veins. Just within the margin is a thread of white, interspacial and following the dentations of margin. Within the main silvery band and extending from costa to anal angle, is a broad black band dashed with tawny in its centre at its upper half. Within this is another silvery band with a black border. The very base or shoulder is tawny. The tawny spot at anal angle suffuses in all directions, extending along lower median nervule to the base.

Hab.—Colombia.

One specimen of this has been found in the British Museum collection without name.

Adelpha helepecki sp. nov.

Expanse 1.80 inches.—Head, thorax and abdomen above, rich brown; below, tawny. Palpi above rich brown; below, grayish white. Legs above, tawny; below, grayish white.

General ground color of upper surface is rich brown. Hind margins are somewhat dentated and touched with a white thread in interspaces.

From the centre of costa on forewing, perhaps nearer apex, extends a broad tawny band running nearly to inner angle. This band is the prominent mark of upper surface. The subcostal nervule as it crosses this band is distinctly black, the other nervules and nervures scarcely showing. Opposite the interspace, at end of discoidal space, this tawny band juts outwards towards hind margin. The apical area is crossed by two lightish bands parallel to hind margin and very indistinct. Inside of the tawny band, the entire basal half of the wing is dark rich brown, excepting four black lines which cross the discoidal space in pairs. The two outer lines are parallel to each other. The inner line of the next pair turns at its centre towards the base.

The upper side of lower wing is of same ground color, marked by four wavy lines or narrow bands of a lighter color which run across the outer half of the wing following the contour of the hind margin. The inner two of these are broader and less distinct than the outer two. The suffusion of these causes the ground color between them to be broken into interspacial semi-circles, in some specimens causing the ground color to become secondary to them. The inner marginal space is lighter than ground color.

On under side of forewing the costa is dark tawny half way to apex. The discoidal space has a ground color of dark tawny. At its base, extending upwards from the wing joint, is a white dash surrounded by black and divided from the ground color by a semi-circular black line bulging outwards with a small white dash within its upper and lower ends. Across the centre of discoidal space is a prominent silver band edged with black. At the lower outer end of discoidal space is an irregular silvery spot. The tawny band across the wing is the same

as on upper surface, except the color is a *light* tawny and the nervures and nervules are distinctly of a darker shade. The portion of this band which juts outwards towards hind margin is crossed at its centre by a dark tawny band which extends downwards, but indistinctly, across the lower portions. The hind margin has a black thread, then a sixteenth-inch border of dark tawny. Within this in apical area are four interspacial dashes of bright tawny suffusing towards the base, and midway between these are three or four silver spots in interspaces downwards from costa. The basal side of these is dashed with black. The outer side of the prominent band is touched with dark brown, broad at centre of wing but linear towards lower angle. The basal portion of the wing below the discoidal space and within the band is black crossed by the dark tawny nervules, and just above the submedian nervure is a silver spot touching discoidal space.

The colors of under side of lower wing are the same as upper wing. The ground color is bright tawny. Across the centre of wing, running from near the apex to the anal angle, is a band of blackish brown, broad at the centre and tapering towards anal angle. Within this is a line of interspacial silver spots. The hind margin with its border of dark tawny is the same as on forewing.

The basal and inner marginal area within the blackish brown band is bright tawny. In the discoidal space are three prominent silver spots, one at its centre and one at each end. Above these, on costa, are two silver spots of equal prominence. The interspaces at end of discoidal space have dashes of silver. The nervures and nervules are dark tawny.

Hab.—Bolivia, near Alezuni.

Described from ten specimens from Alezuni, Bolivia. Absolute identification from representatives of this genus in collections in this country seemed impossible, but it was identified in London as *A. saundersii* Hew., which I have from Colombia and Bolivia. The yellow band of *saundersii*, however, is not so prominent and is encroached upon more by the rich ground color. The underside of *saundersii* is quite different, the bright silver of *helepecki* being replaced by dead white, and the dark band of lower wing with its silver interspacial spots showing in *saundersii* as a narrow dark tawny band. While the location of silver or white spots is practically the same on each, the size of these spots differs totally, and the bright tawny on underside of *helepecki* does not appear on *saundersii*, but is replaced by a dark brownish. There is no variation in the specimens that I have of *helepecki*, nor any sign of intergrading towards my specimens of *saundersii*.

Dædalma bronza sp. nov.

Expanse 2.70 inches.—Head, palpi, eyes and antennæ dark bronze-brown. Thorax and abdomen dark bronze-brown above, dark grayish brown beneath. Legs dark grayish brown.

Entire upper surface of both wings is dark bronze-brown, with some lustre, without markings. Hind margins dentated, strongly so on lower wings. In interspaces the edge has a white thread, entirely absent, however, in some specimens.

Underside of forewing grayish bronze. Costa grayish bronze. From point of apex, and extending down to second median nervule, one-eighth inch within the margin, is a jagged line of dark bronze. At the second median nervule it suffuses and broadens out to the margin, extending as a marginal border to lower angle. Within this the area to top of discoidal space is grayish bronze, broadening out below and covering the lower interspaces entirely up to median nervure. The upper portion of this area is slightly dusted with silvery scales. In the interspace below the fifth subcostal nervule is a small circular dark brown spot with a white dot at centre, situated just inside the jagged line above mentioned. In interspace between the median nervules there is another, and also in interspace above submedian nervure, similarly situated, is a larger circular spot of dark brown, but without the central white spot. The discoidal space is grayish, but darker than rest of wing and suffuses into the adjoining interspaces.

The lower side of hind wing has a hind marginal border of dark brown about one-eighth inch wide, following the dentated contour of the margin. Within this is an area of grayish bronze corresponding in color to the same area in forewing and covering outer half of wing. In each interspace is a prominent dark brown spot with a white dot at centre, the upper three being on the basal side of this grayish bronze area, while the lower ones are in the centre of it. Within this area, towards base, is a space of silvery white with ill-defined edges, extending from the costa (just within apex) to a point somewhat above anal angle. There is a jagged dark brown line from the end of discoidal space nearly to inner margin. The basal area is dark brown dusted with silvery scales.

Hab.—Bogota district, Colombia.

Described from nine specimens in my collection. One specimen, the only one found in any American or English collection, is in the Hewitson collection, but without name.

Euptychia luttela sp. nov.

Expanse 1.15 inches.—Head and palpi blackish brown. Antennæ blackish brown above, with slight whitish annulations at base of each joint; below, light brown. Club the same, but showing fulvous tip beneath. Thorax and abdomen dark bronze-brown, lighter underneath. Legs the same.

Entire upper surface of both wings bronze-brown, with a little lustre and tending to darker at base.

Underside of forewing dark bronze-brown, lacking lustre. One-sixteenth inch from hind margin is an indistinct line of dark brown, the area outside of this line at apex being dusted with grayish scales. One-quarter inch within this line is another, very indistinct, running from costa down to third median nervule. Inner margin grayish.

Hind margin of hind wing dark brown. One-sixteenth inch inside of margin is a dark brownish line, and the same distance within this another, both following contour of margin. The space between these lines is heavily dusted with somewhat tawny scales suffusing beyond the lines on both sides. Between the

first and second submedian nervules is a small tawny spot, with a black speck in its centre touching the inner side of the black marginal line. The inner half and basal area is black bronze-brown.

Hab.—Bolivia, near Alezuni.

Taken August 9th, 1899. It closely resembles *E. liturata* Butl., but lacks the oscellus at apex of forewing below.

Ithomia gardneri sp. nov.

Expanse 2.30 inches.—Head black, with a white spot at centre and a white spot over each eye. Eyes surrounded by a white ring. Thorax above, black, with a longitudinal white dash; below, white. Abdomen above, black; beneath, white. Antennæ above, black; beneath, white in some lights. Club the same. Legs black above; white beneath.

Upper surface generally transparent with a yellowish tinge. Veins black.

Costa of forewing tawny with a whitish dash on end of discoidal space. Hind margin edged with black, a little more prominent at ends of veins. Inner marginal space black. In some lights there are two dashes of yellowish in interspaces at end of discoidal space, the lower one being nearer hind margin. The interspaces at hind margin also have a dash of the same, and there is another longitudinally across centre of discoidal space. These markings are scarcely visible.

The hindwing has a marginal border of black somewhat broader than on forewing, and within this, on hind margin, the yellowish dashes are larger.

The underside of both wings is the same as upper side, except that the black is replaced by dark tawny brown.

Hab.—Bolivia.

Described from eight specimens in my collection taken near La Paz, Bolivia, in April, 1899. It is close to *I. esula* Hew. in its general appearance.

Lycæna babhru sp. nov.

Expanse .88 inches.—Head, abdomen and legs light brown above; whitish beneath. Thorax light brown above; white beneath. Palpi light brown, almost white, tipped with black.

General ground color of upper surface is brown with considerable lustre. The hairy fringe of hind margin is brown, shading to white at outer edge. There is a black thread along hind margins.

The upper side of forewing is light brown without markings, the density of the brown being variable in various lights.

The upper side of hind wing is the same, except that there are interspacial lunules of white near hind margin, scarcely perceptible at apex, but growing quite prominent near anal angle. These lunules are nearly circular, the inclosed space being somewhat darker than the ground color, resembling darkish spots.

The underside of forewing is light brown without lustre. Hind marginal fringe the same. From the subcostal interspace downwards is a line of interspacial dark spots surrounded by a whitish thread, seven in number, the upper

four near centre of wing and in line with the hind margin, the lower three somewhat nearer base. Inside the upper four spots, nearer base, and in the discoidal area, are two more similar spots less distinct. In interspaces at hind margin is a series of lightish lunules surrounded by dark brown, all quite indistinct.

The underside of hindwing is of the same ground color; the marginal fringe also. In subcostal area, midway from apex to base, is a dark spot, with a whitish border resembling the spots on forewing, and near the base is another. Below the median vein at end of discoidal space is a prominent dash of white extending nearly to hind margin. This forms the prominent mark of under surface. From its basal end, and running to inner margin, is a series of three white lunules. The lunules at hind margin are far less distinct than on upper surface, and are elongated towards the base.

Hab.—Sicasica, Bolivia.

Taken in October, 1899.

Metacharis indissimilis sp. nov.

Expanse 1.25 inches.—Head above, black; beneath, light tawny. Antennæ black. Legs light tawny. Thorax and abdomen above, black; beneath, light tawny.

General ground color of wings dark grayish brown.

Costa of forewing dark grayish brown. Hind margin has a narrow border of rust color, scarcely perceptible at lower angle, but broadening towards apex. In each interspace, about one-sixteenth inch from margin, is a black dot. At apex, within the rust-colored tip, is a broad band of tawny color running from costa across apical area towards hind margin, a quarter inch wide. This is the prominent feature of the wing. The rest of the wing to the base is dark grayish brown, marked with irregular transverse black lines. Three of these lines, equidistant, cross the discoidal space extending downwards to submedian nervure. Another borders the outer edge of discoidal space. Another starts at subcostal nervure, bordering the tawny space and then extends downwards to submedian nervure and at right angles to it. Outside of this, in the two lower interspaces midway to hind margin, are two black dashes.

The hind margin of lower wing is rust colored, but suffused by ground color, rendering it almost imperceptible. The interspacial black dots are present, each surrounded on basal side by a semicircle of black. The black lines of forewing are duplicated, but broken, having more the appearance of a series of spots.

The general coloring of under surface is much brighter, generally tawny.

The hind margin of forewing is dark tawny or rust colored. The interspacial black dots are quite prominent. The tawny band of upper side is repeated, but suffuses downwards towards inner margin. The discoidal space is rust color, suffusing into adjoining interspaces. The space from lowest median nervule to inner margin is yellowish gray, except for a small portion bordering lower angle. The black lines of upper surface are duplicated but broken into spots.

The hind margin of lower wing has a prominent border of rust color one-eighth inch wide. The interspacial black dots are present, bordered on basal side by a bit of light tawny, the black semi-circles of upper side scarcely showing. Rest of wing is yellowish gray, the black lines or spots appearing as on upper side.

Hab.—Colombia, Bogota District.

This closely resembles *M. lucius* Fabr., and several examples are in European collections mixed in with it.

Pamphila cuadrada sp. nov

Expanse 1.00 inch.—Head and thorax above, dark brown; beneath, light brownish gray. Abdomen above, dark brown; beneath, dark brown tending to dark rust color. Legs the same. Abdomen above, nearly black with slight white annulations at base of each joint; below, the same with a dash of whitish at club.

Upper side of forewing dark bronzy brown with slight lustre. Costa near base is dusted with light golden brown scales. Above the end of discoidal space are two indistinct tawny dots. Within the discoidal space near its end and resting on median nervure is a tawny spot, and below it in next interspace, is another somewhat larger. In interspace above this, at its junction with discoidal space, is another similar spot adjoining the first mentioned one. The fringe of hind margin is of the ground color.

Upper side of hind wing rich dark brown, darker than forewing and without lustre. Across the end of discoidal space is bright tawny dash extending basewards along subcostal and median nervures to centre of discoidal space and then suffusing across the space forming a square. The hind marginal fringe is light brown.

Underside of forewing is nearly black. The costal space is dark brick red, the red covering also the apical area and extending down hind margin and diminishing to a point at its centre. The two subcostal white dots of upperside are repeated. The three tawny spots of upperside are repeated, but are nearly white and suffuse into one another, the suffusion extending downwards into inner marginal area. The marginal fringe is of ground color.

Underside of hindwing is dark brick red, without markings, except indistinct interspacial blotches of a darker shade, giving it a mottled appearance on very close inspection. The inner marginal area tends to blackish. The hind marginal fringe is dark brown.

Hab.—Bolivia, near Coroico.

Described from three specimens taken in the Coroico district in May, 1899.

Phyciodes northbrundii sp. nov.

Expanse 1.45 inches.—Head and palpi black. Collar black, with a dark fulvous spot at each shoulder. Antennæ dark brownish black, with a slightly darker annulation at base of each joint. Thorax black above and below, with a dark fulvous spot at joint of forewing below. Abdomen above, black; below, grayish.

Ground color of wings black or dark brownish black, with dark fulvous markings.

Costa of forewing black, with a dash of dark fulvous extending from joint. One-third distance from apex to base is a series of dark fulvous interspacial dashes, five in number, extending at right angles to costa down through the next lower interspaces, forming a fulvous band across apical portion of wing. Discoidal space dark fulvous, with a black dash crossing the centre transversely. The dark fulvous extends into the three lower interspaces one-half distance to hind margin. Hind margin black.

Hind wing black, with dark fulvous centre; the fulvous centre being interspacial, most extensive in discoidal space and encroached upon in each interspace by a black pointed dash extending inwards from the black back-ground of outer third of wing.

Underside of forewing the same as upperside, except that the dark fulvous band across apical area is somewhat broadened and extends down on hind margin to inner margin, and the apical area is fulvous, with a black thread along centre of each interspace. Nervules black.

Underside of hindwing has a border of dark brownish fulvous covering one-third of wing. Within this and shading into it is a narrow portion of light fulvous. Basal portion dark fulvous, the discoidal space being crossed by a black line. In each interspace, extending from hind margin to centre of wing, is a black line. Nervules and nervures black. Inner margin light fulvous.

Hab.—Bolivia, Cochabamba district.

Described from four specimens taken north of Cochabamba, August 25, 1899.

A LIST OF NEUROPTEROID INSECTS FROM MEXICO.

BY NATHAN BANKS.

In the following pages are included a list of the Neuropteroid insects (except Odonata) collected in Mexico during the past few years by Mr. O. F. Barrett. Some of the new species have been previously described and descriptions of several are included here. There are altogether fifty species, distributed among the three orders as follows:

Pseudoneuroptera	11
Neuroptera	20
Trichoptera	19
Total	50

In the Neuroptera and Trichoptera there are but few other species known from Mexico, but in the Pseudoneuroptera there are a considerable number of described species, particularly Perlidæ and Ephemeridæ, that do not figure in this list. About seventeen species are described as new.

In the Neuroptera especially noticeable is the absence of the Hemerobiidæ, a family so well represented in temperate regions. Two species, however, of this family have been described from Mexico by Hagen. On the other hand, the Chrysopidæ seem to be as numerous in species as in the more northern regions. Of particular interest is the tiny ant-lion fly, *Microleon apicalis*, one of the smallest and most handsome of the family. Although no Panorpidæ are in this list, two Panorpas and a Bittacus have been described from Mexico.

In the Trichoptera the majority of the species belong to the Leptoceridæ and Hydropsychidæ; a fact true of all tropical regions. It is here where we find most of the new species.

Of the localities mentioned in the list, the following are in the State of Vera Cruz: Jalapa, Chavarillo, Teocelo, Xico and Presidio. In Morelos is Cuernavaca. In the Federal District (D. F.) are Thalpan, Tacubaya and Esclave. Tomellin is in Oaxaca; Santa Maria in Pueblo; Durango in Durango State; Amecameca in State of Mexico; and Iguala in Guerrero.

PSEUDONEUROPTERA.

TERMITIDÆ.

Calotermes marginipennis Latr.

Winged specimens from Tacubaya, D. F., September.

PERLIDÆ.

Pseudoperla dilaticollis Burm.

Specimens from Cuernavaca, Morelos, June; and Jalapa, Vera Cruz, August. The one from Cuernavaca is much smaller than the others.

Pseudoperla nigrocincta Pictet.

Many specimens from Jalapa, August, and Orizaba and Cuernavaca in June. Varying much in size and distinctness of markings.

PSOCIDÆ.

Pterodela pedicularis Linn.

One from Tacubaya, D. F.

Psocus barretti Banks.

Several from the Federal District.

EPHEMERIDÆ.

Callibætis montanus Eaton.

Several specimens from near Tacubaya.

Callibætis undatus Pict.

A few examples from Tacubaya.

Bætis sp.

A small and pretty species from Cuernavaca, April. Related apparently to *B. salvinii*.

Bætis sp.

One of a rather large species from Xico.

Bætis sp.

A small species from Xico.

Tricorythus explicatus Eaton.

Several specimens from Jalapa. It has the general appearance of our species of *Cœnis*.

NEUROPTERA.

MEGALOPTERA.

SIALIDÆ.

Corydalis lutea Hagen.

Many specimens of various sizes from Jalapa and Cuernavaca in June. The mandibles of the male vary in development as in our common *C. cornuta*.

Corydalis soror Hagen.

One example of this handsome species from Cuernavaca, June. It is very easily recognized by the inflated sides of the head.

Neuromus hieroglyphicus Rambr.

Several specimens of this striking species from Cuernavaca, June. I have seen another specimen of this species from Mexico under a manuscript name. The dried specimens are yellowish or whitish, but Mr. Barrett says they are bright green when alive.

Sialis mexicana n. sp.—Head reddish yellow, black each side behind the eyes, basal joints of antennæ yellow, rest dark brown. Pronotum reddish, thorax dark brown; legs rather paler brown; abdomen black; wings nearly black, veins jet black, some pale spaces in some of the larger cells. Antennæ very hairy, rather larger in the middle than at base, tip fine. Wings plainly narrower than in *S. infumata*, venation similar to that species, but with fewer costal cross-veinlets. Length 16 mm.

One specimen from Jalapa, Vera Cruz, August. Distinct by the bright color of the head and prothorax.

STEGOPTERA.

HEMEROBOIDEA.

CONIOPTERYGIDÆ.

Coniopteryx barretti Banks.

Several specimens from Amecameca, June. Larger than our species.

MANTISPIDÆ.

Mantispa varia Erich.

One example from Cuernavaca. It is very close to our common *M. brunnea*.

CHRYSOPIDÆ.

Chrysopa mexicana n. sp.—Face pale yellow, sometimes with reddish below, a black point each side by clypeus, a black streak on each cheek from eye, a broad undulate black band under antennæ, continued above between them in the shape of a Y, vertex with two black points, a larger spot each side behind the eye; palpi marked with black; first joint of antennæ with a red band above, second joint black, rest pale yellowish, darker on tips; thorax green, a few indistinct dark spots each side on pronotum; legs greenish, tarsi yellowish; wings green, venation green, ends of costal cross-veins and bases of radial cross-veins black; in hindwings the costal cross-veins wholly black. Wings rather broad, rounded at tips. Length 19 mm.

Six specimens from Thalpan, D. F., July. Closely related to *C. chlorophana*.

Chrysopa lateralis Guérin.

One example from Jalapa, Vera Cruz, August. The gradate veinlets and the radial and costal cross-veins are mostly black.

Chrysopa tolteca n. sp.—Face pale yellowish, vertex green, two indistinct reddish spots above; antennæ pale yellowish (not black), basal joint with a red line above; pronotum green, with a red stripe each side; thorax and abdomen green; legs pale greenish; wings green, cross-veins mostly black. Antennæ scarcely longer than the wings; wings rather narrow, acute at tips. Length 14 mm.

One specimen from Tomellin, Oaxaca, June.

Chrysopa rufilabris Burm.

One specimen, apparently not different from our forms, from Cuernavaca, Morelos, May.

Chrysopa externa Hagen.

One example from Tehachapi. Probably the same as Hagen had from Mexico, but Hagen's specimen from D. C. was probably *C. harrisii* Fitch. The species of this group are extremely close, and the character given for *C. externa* is sometimes present in various species.

Leucochrysa mexicana Banks.

One example from Charvarillo, Vera Cruz.

Meleoma innovata Hagen.

M. mexicana Banks.

One male from Amecameca, June. Described by Hagen as a *Chrysopa*, and I had overlooked the fact that in the description are the characters that place it in *Meleoma*.

MYRMELEONOIDEA.

MYRMELEONIDÆ.

Acanthaclisis fallax Rambur.

A male from Cuernavaca, June. Widely distributed throughout the tropical regions of America.

Myrmeleon immaculatus De Geer.

Specimens from Cuernavaca, June, and Teocelo, Vera Cruz, August, do not differ much from our forms.

Brachynemurus versutus Walker.

B. mexicana Banks.

I think my species must be the same as Walker's, but several of his statements are considerably at variance with all my specimens. Several specimens from Cuernavaca, Durango and Esclava in September and October.

MICROLEON gen. nov.

No spurs; legs short; first tarsal joint of leg 1 as long as next three. Three cross-veins before the origin of radial sector; anal vein ends near middle of hind margin, about over the origin of the first fork of the radial sector; radial sector with but three or four branches; between anal and cubital veins but one series of cells (in this respect resembling *Cryptoleon* and its allies); sometimes a few of the costal veinlets forked; in hind wings the cubitus does not fork till end of the anal. Antennæ short, capitate.

Type *M. apicalis.*

Readily separated from all other genera on account of the simplicity of its venation. From *Maracauda* it is distinguished by the fact that the cubital fork of hindwings does not run parallel to the anal. It is probably closely related to Hagen's *Myrmeleon pygmæus.*

Microleon apicalis n. sp.—Face brown; two median pale spots and one each side from the lower part of eye; vertex black; a white mark each side above the eye, and sometimes four pale dots near the middle; antennæ annulate, club yellowish; pronotum brown, a median pale stripe on anterior part, and sometimes a pale spot on each side; thorax brown, a few pale spots, mostly on the lateral lobes; abdomen brown, the basal segment rather reddish; legs and palpi pale yellow, with many black bands. Wings hyaline, the apical third brown; the pterostigma large, snow-white; venation dark brown and margined with brown, some of the longitudinal veins interrupted with white; around the tip, between each pair of veinlets, is a minute white dot. Hind wings marked like the front pair. Length 15 mm., expanse 29 mm.

Three specimens from Durango, Mexico [Barrett]. This is undoubtedly the most handsome Myrmeleonid yet known from North America; the snow-white pterostigma shows too much advantage on the rich brown of the apical part of wings. It shares with *Myrmeleon pygmæus* the honors of being the smallest Myrmeleonid.

EREMOLEON gen. nov.

Eight cross-veins before origin of radial sector, first branch of radial sector arising considerably beyond end of anal vein, radial sector with eight branches, between cubitus and anal but one series of cells, wing broad before the pterostigma, several of the costal cross-veins forked before pterostigmá, in hindwings but one cross-vein before origin of the radial sector. Pronotum narrow; antennæ slender; legs long and slender, not lineate with black; spurs slender, as long as first two or three basal joints, the first basal joint very long.

Type *Myrmeleon macer* Hagen.

By position of radial sector in fore and hindwings, this genus is allied to *Psammoleon*, but readily separated by broad wings, slender legs and narrow pronotum, as well as by minor characters. From *Glenurus* it is readily separated by narrower hindwings, fewer branches of radial sector and by unhooked spurs.

Eremoleon macer Hagen.

Two females from Cuernavaca, July.

ASCALAPHIDÆ.

Ulula tuberculata n. sp.—Face black below antennæ, labrum pale yellow, both clothed with white hair; above antennæ dark gray or black hair; antennæ annulate at tips of joints, club brown; thorax light brown, clothed with white hair below, and above with gray and black hair; legs pale, tips of femora blackish, basal tarsal joints annulated with black; abdomen black, mottled with brown and some yellowish. Wings hyaline, pterostigma black, in hind wings a brown cloud just below the pterostigma, venation mostly black, subcosta yellow, interrupted with black. Antennæ about equal to length of wings; mesothorax with the anterior lobes plainly elevated in form of large rounded tubercles; wings longer than in *U. hyalina*, less acute at tip, sixteen radial cross-veins. Length 22 mm., wing 29 mm.

One specimen from Iguala, in September. None of the other species known to me (*U. hyalina, 4-punctata, mexicana, bicolor* and *albifrons*) have elevations on the mesothorax.

Haploglenius flavicornis McLachlan.

One specimen from Cuernavaca, September; the type locality. It is a very handsome species.

TRICHOPTERA.

LIMNOPHILIDÆ.

Platyphylax discolor n. sp.—Head black, with black bristles, antennæ dull yellowish brown, thorax dark brown, a black stripe each side; abdomen yellowish beneath, brown above; legs dull yellow, hind pairs densely spined on tibiæ and tarsi, front pair with very few spines, a black stripe under anterior femora; spurs 0-2-2. Wings hyaline, densely and evenly clothed with short black hair, giving them a grayish appearance; veins pale, with black bristles; hind wings gray-hyaline. Forewings rather narrow, rounded at tip, discal cell longer than pedicel, first apical but a short distance on discal cell, second, third and fourth subequal at base, fifth acute at base and not on thyridial; cubitals broken at posterior anastomosis. In hindwings the third apical indents the anastomosis considerably, and contains a dark dot near base, fourth apical wide at base, fifth short-petiolate. Length 16 mm.

One from Tacubaya, D. F., September. Hardly a true *Platyphylax*, but placed temporarily in this genus until it is divided as it should be.

SERICOSTOMATIDÆ.

EREMOPSYCHE gen. nov.

Spurs 2-4-4; basal joint of antennæ long, densely hairy; maxillary palpi of male long, recurved, densely hairy, labial palpi slender, pendulous; no groove in hindwings; costal margin of forewings thickly hairy, with the appearance of being recurved, discal cell closed in both wings, in forewings rather long, in hindwings short.

Type *E. frontalis*.

Probably closely related to *Lasiocephala*, but no cilia on antennæ, and the basal joint simple.

Eremopsyche frontalis n. sp.—Maxillary palpi and basal joint of antennæ densely clothed with long, shining black hair, rest of antennæ pale yellow; thorax brown above, with black hair; legs and spurs pale yellow, the anterior and middle tibiæ and tarsi blackish outside. Wings thickly clothed with short, partly scale-like hairs, very dense along costal margin, fringe black, hind wings with fewer black hairs, fringe black. Length 9 mm.

One specimen from Jalapa, Vera Cruz, September.

Olemira mexicana n. sp.—Head blackish, basal joint of antennæ long, sparsely clothed with long erect hair, rest of antennæ pale yellowish, with some brown hair, thorax and abdomen brown, legs and spurs pale yellow, spurs 2-4-4.

Wings gray, with black and some golden hairs, fringe dark gray, with a patch of white on hind margin before the arculus; hindwings gray especially toward tips, fringe dark gray. Wings quite broad, discal cells closed in both pairs, discal cell of forewings quite long, the first apical cell but a short distance upon it; from lower branch of cubitus back to anal vein is a short cross-vein parallel to and near hind margin of wings; discal cell of hindwing rather short, the cubitus is forked considerably before the margin. Length 12 mm.

One specimen from Tacubaya, November.

Helicopsyche mexicana n. sp.—Head black, with some black bristles above and on the face; maxillary palpi black, clothed with long black hair; labial palpi paler; basal joint of antennæ grayish, with long black hair, beyond yellowish to middle, after which they are blackish; thorax and abdomen black, with black hair, the latter yellowish at tip; wings clothed with black hair and a sparse sprinkling of yellow dots; fringe long, black, with some yellow patches, a prominent one at the arculus; hind wings with black hair and long black fringe; legs with black coxæ, femora pale, tibiæ and basal article of tarsi black, rest of tarsi yellow, the joints tipped with black. Of the general structure of the genus; no prominent warts on head, maxillary palpi of male long, upcurved; the labial palpi dependent; antennæ shorter than wings, curved, their basal joint longer than head; no ocelli; spurs 0-2-4, at least there are no distinct spurs on the anterior tibiæ in this specimen, subapical pair on hind tibiæ close to apical pair; seventh ventral segment with a long spatulate appendage. Length 6.8 mm.

One male from Cuernavaca in May. Larger than the other species of the genus known to me.

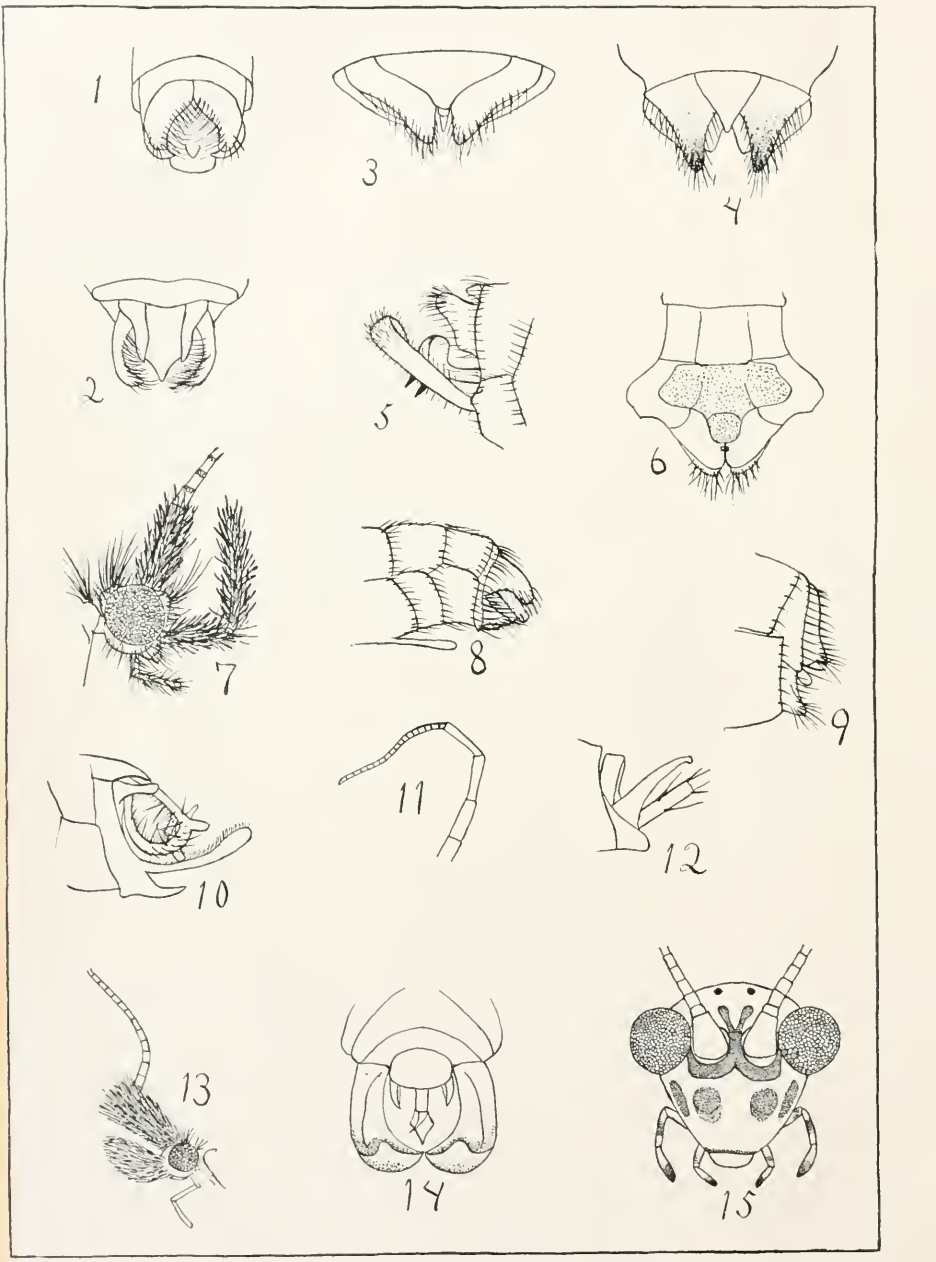
LEPTOCERIDÆ.

Leptocerus mexicanus n. sp.—Head brown, sparsely clothed with short white hair; antennæ yellowish, basal part annulate with brown, first joint clothed with white hair; thorax brown, with scattered white hair, longest on the prothorax; abdomen brown, legs yellowish brown, first pair quite dark, except on base, fine black spines on tarsi; wings gray, clothed with brown and black hair, some yellow hair intermixed, near the middle a darker oblong patch; much white hair on the basal part; veins brown, fringe gray; hind wings gray, with gray fringe and brown veins. Length 14 mm.

One male from Cuernavaca, Morelos, June.

Leptocella dorsalis n. sp.—Head yellow, clothed above with white hair; antennæ yellowish, annulate with brown on basal part, dark beyond, less than twice as long as body; thorax yellowish, clothed above with white hair; abdomen brown, greenish on base; legs yellowish, with mostly yellow hair; wings hyaline, veins yellowish, membrane clothed with yellowish brown hair, quite dark brown on basal part before the cubital vein, the anal area snow-white, quite broad at base and tapering to a point at arculus. When the wings are closed these white stripes with the white of head and thorax form a broad dorsal stripe. The apical fringe is golden brown, but just beyond the arculus is a patch of white; hind wings rather dusky near tips, fringe gray. Length 10 mm.

Three specimens from Jalapa, Vera Cruz, August.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June; and from Teocelo in August. Some specimens are faintly brownish and have an indistinct dark cloud obliquely below the pterostigma of the forewings.

Macronema cupreum Walker.

One example from Tacubaya, October; a very pretty insect.

RHYACOPHILIDÆ.

Rhyacophila mexicana Banks.

Two specimens from Xico and Jalapa, September.

EXPLANATION OF PLATE XII.

Fig. 1. *Hydropsyche mexicana*, genitalia, below.
" 2. " " " above.
" 3. *Heteroplectron nigripennis*, genitalia, above.
" 4. " *mexicanum*, " "
" 5. *Leptonema pallida*, genitalia, side.
" 6. *Leptocerus mexicanus*, genitalia, above.
" 7 *Helicopsyche mexicana*, head, side.
" 8. " " genitalia, side.
" 9. *Platyphylax discolor*, genitalia, side.
" 10. *Leptocella gracilis*, genitalia, side.
" 11. *Diplectrona unicolor*, palpus.
" 12. " " genitalia, side.
" 13. *Eremopsyche frontalis*, head, side.
" 14. " " genitalia, below.
" 15. *Chrysopa mexicana*, face, front.

Leptocella gracilis n. sp.—Head yellowish, clothed above with long white hair; apical part of antennæ blackish, basal part yellowish, the joints broadly annulate with brown; thorax yellowish, with white hair, abdomen yellowish on base, beyond greenish; legs yellowish, clothed with white scales; wings hyaline, veins yellowish, membrane clothed with yellowish white hairs, more brownish patches scattered along on the veins, the apical fringe yellowish brown, on apical margin on anterior part are two black dots; hind wings hyaline, veins white, fringe gray; structure similar to the other white species. Length 9.5 mm.

One male from Cuernavaca, Morelos, June.

Heteroplectron mexicanum Banks.

Two specimens from Cuernavaca, June. It has somewhat the appearance of certain sawflies.

Heteroplectron nigripennis Banks.

Several specimens from Santa Maria, Pueblo, May; and Cuernavaca, June. Smaller than the preceding, but closely related to it.

Heteroplectron maculatum n. sp.—Head reddish yellow, vertex dark brown, antennæ reddish yellowish, dorsum of rest of thorax dark brown; abdomen dull yellowish on base, brown beyond; legs yellowish, the tibiæ and tarsi, except the basal joint of anterior and middle pairs, thickly clothed with black hair, spurs blackish; wings black, with black hair, some yellowish hair near base, before the middle a narrow, curved transverse band of white hair, not attaining the anterior margin; at end of cell is another shorter, nearly straight white band, not reaching either margin; hind wings shining black. Structure similar to *H. mexicanum*. Length 14 mm.

One specimen from Presidio, Vera Cruz, June.

The three species of *Heteroplectron* may be tabulated as follows:

1. Wings banded with pale, femora mostly yellow ..... **maculatum.**
   Wings unmarked, femora mostly black ..... 2.
2. Head mostly yellowish above ..... **nigripennis.**
   Head black above ..... **mexicanum.**

HYDROPSYCHIDÆ.

Hydropsyche mexicana n. sp.—Head clothed with black hair, some golden hair at base of antennæ; latter yellowish, with indistinct spiral lines; thorax black, with short black hair; abdomen brown; legs pale dull yellowish; spurs same color; wings dark, irrorate with yellow, margins interruptedly yellow and black, on the costal margin black patches are quite long, much shorter on apical margins, where the black is at the ends of veins and the yellow between them; fringe dark gray; hind wings gray, fringe darker gray. Antennæ about equal to length of wings. Length 11.5 mm.

One specimen from Tacubaya, D. F., May.

Polycentropus sp.

One example of a small species from Cuernavaca, June.

Philopotamus barrettæ Banks.

Many specimens from Jalapa in April, and Teocelo in September. There is but little variation in markings.

Philopotamus mexicanus n. sp.—Head with black hair, not very dense, ocelli distinct; first joint of antennæ brown, basal joints yellow, annulate with brown, most of antennæ from before the middle black; thorax brown, with black and few golden hairs; legs pale yellow, with yellow spurs. Wings dark, veins black, clothed with golden and black hair, the golden most prominent near tip; several patches of erect black hair; a long patch on anal region at base, one at and one before the arculus, and one near fork of the cubitus, hairs on many veins erect, fringe black; hindwings grayish, fringe dark gray. Length 10 mm.

One specimen from Jalapa, Vera Cruz, April.

Philopotamus bicolor n. sp.—Head bright yellow, clothed with bright yellow hair; palpi brown, basal joint yellow; antennæ black, except yellow first joint; ocelli distinct; thorax and abdomen yellow, with yellow hair; legs yellow, anterior tibiæ and tarsi black; middle and hind tarsi, except basal part of first joint, black; spurs 0-4-4 black. Wings jet black, with short black hair and black fringe; hind pair dull blackish. Length 8 mm.

One specimen of this striking species from Cuernavaca, May.

These three species of *Philopotamus* may be easily separated as below; *P. bicolor* will probably form a new genus:

1. Head and thorax yellowish, wings uniform black ..... **bicolor.**
   Head and thorax brown, wings mottled with yellow ..... 2.
2. Wings with patches of erect hair, not much yellow above.... **mexicanus.**
   Wings without erect hair, much spotted with yellow..... **barrettæ.**

Diplectrona unicolor n. sp.—Black throughout, the wings of course more clear, especially the hind pair. Head rather broad, no ocelli, two large posterior warts, no curved transverse ones. Antennæ scarcely as long as wings, slightly serrulate beneath, the first four joints as long and simple, those beyond apparently much shorter; maxillary palpi with joints two and three subequal, the fourth rather longer, the fifth nearly equal to the preceding, curved and multiarticulate. The mesoscutellum of the thorax is elevated. Venation similar to *Timodes*. Spurs 2-4-4; hind tibiæ sparsely clothed with erect hair above, yet scarcely forming a fringe. No filiform appendage visible on sides of abdomen. Wings densely clothed with rather long black hairs; there is a dark dot in the base of third apical cell; the fringes very long. Length to tip of wings 6.5 mm.

Several specimens from Cuernavaca in June.

Leptonema pallida Guérin.

Many specimens from Jalapa, August; from Cuernavaca in May,

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